

THE IRON AGE

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▲▲▲ THE IRON AGE ▲▲▲

AUGUST 29, 1935

ESTABLISHED 1855

Vol. 136, No. 9

Are You Interested in Potatoes? You Should Be

ORDINARILY, it is sound editorial policy for a business paper to strictly avoid taking a position on two subjects; politics and religion. We are not guilty as yet of trespassing upon the field of religion with editorial opinion and hope we never will be.

Until about two years ago, we also had been able to steer clear of what might be called political discussion, except in such minor and specialized matter as tariffs and the like which might directly affect our field. Today, we are in politics, if you want to call it that, up to our ears and expect to stay that way at least until November, 1936. When politicians plunge into business affairs to the detriment of business, as the present political party has done, it is time for business and the business papers that speak for business to get into politics.

This publication, in company with the majority of the business and industrial fields that it serves, had no prejudice against the present Administration at the outset. If proof of this is needed it may be said that The Iron Age devoted its front cover of March 9, 1933, to a sincere and heartfelt appeal for support of the new President. Since that time, however, we have become convinced by event after event that, misled by an academic clique which prefers to take its pattern from Lenin and Marx, rather than from Washington, Jefferson and Lincoln, the present Administration has acquired an incurable anti-business, anti-initiative, anti-success complex. And we believe, further, that this can only be cured by a house cleaning that will remove from the Washington scene, the whole motly

company of over-educated underexperienced and megalomaniacal dilettantes who now impose their fantasies upon the American people.

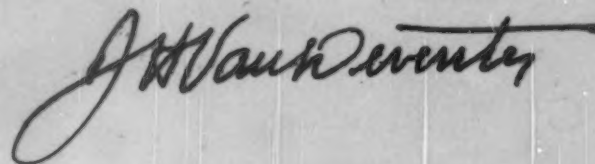
To this end, The Iron Age will do its utmost. If this be treason to the precedents of business publishing, make the most of it.

But before you do so, consider the subject of potatoes. True, iron and steel and machines are not made out of them, but what has happened to potatoes indicates what would probably happen to everything else that is raised or made if the "wild boys" in Washington succeed in hamstringing the Constitution.

On Aug. 14, Congress passed an act imposing "potato control" upon the country. Hereafter, potatoes must be packed in boxes bearing Government stamps, like cigars, and buyers of bootleg potatoes, by the act, are subject to a fine of \$1,000 and imprisonment. Strict quotas of production, too, are allotted to each farmer raising more than five bushels!

Shades of the Prohibition Act! If it was impossible to prevent bootlegging of liquor and to trace down America's illicit stills, how much more impractical to regiment the homely spud. But impracticality seems to be the order of the day.

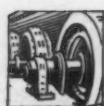
Do you blame us for becoming politically minded?



Methods Employed in Making Cone A

By ATHEL F. DENHAM

o o o



DESIGN of an improved type of hour-glass worm gearing designated as the Cone worm gear (after Samuel I. Cone,

the inventor) was announced a few years ago. More recently, a method and equipment for the manufacture of this gearing have been developed, as outlined in this article.

In a worm gear of this type the entire tooth depth of the worm thread and wheel-tooth flanks are in contact while the worm is threading itself through the wheel teeth or vice versa. There is con-

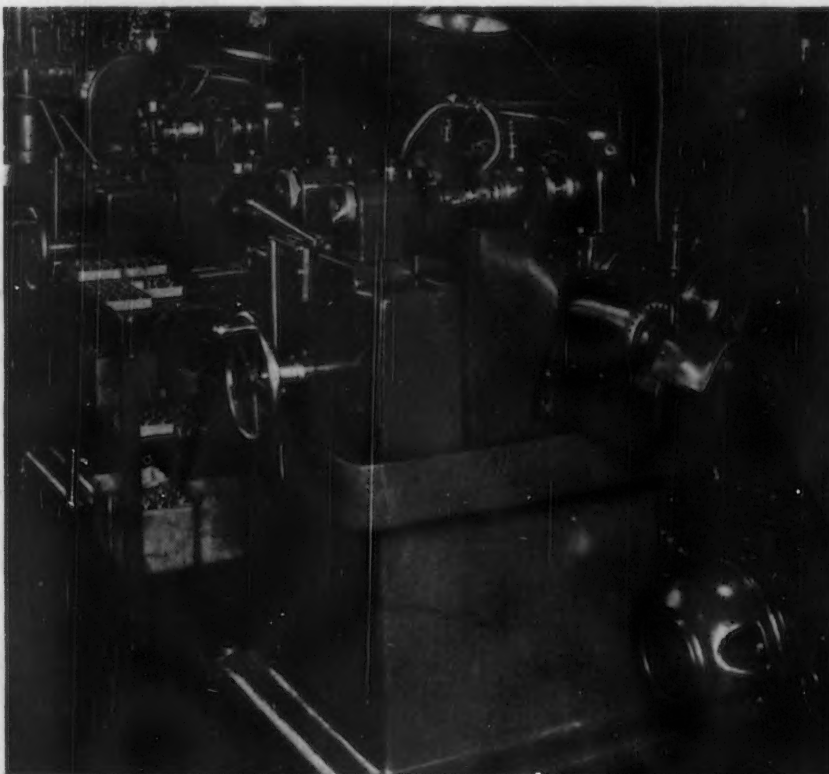
tact at all of the worm leads at all times instead of at one worm lead only, as in the straight worm, and the effective contact surface is therefore greater.

The Cone worm follows the true curvature of the wheel and has a constant circular pitch corresponding with the constant circular pitch of the worm wheel. The lines of contact occur at the mid-plane simultaneously on as many teeth as the particular design envelopes. Similar lines occur above and below the mid-plane simultaneously.

With all of the worm leads in substantial surface contact at all times, instead of one worm lead in line contact only, as in the straight worm, the Cone type of gear has greater load capacity for the same basic dimensions. Another feature is that the entering end of the worm thread contacts only with the leaving end of the wheel tooth, which makes for favorable conditions of lubrication.

This factor of better lubrication, as well as the advantages of having wheel teeth and worm threads in contact the whole depth of the teeth and the obtaining of surface contact over the entire width of the tooth, was recognized in the original hour-glass worm gearing. Unfortunately, however, when the problem of making such gears was turned over to the production man it was found impossible to make them.

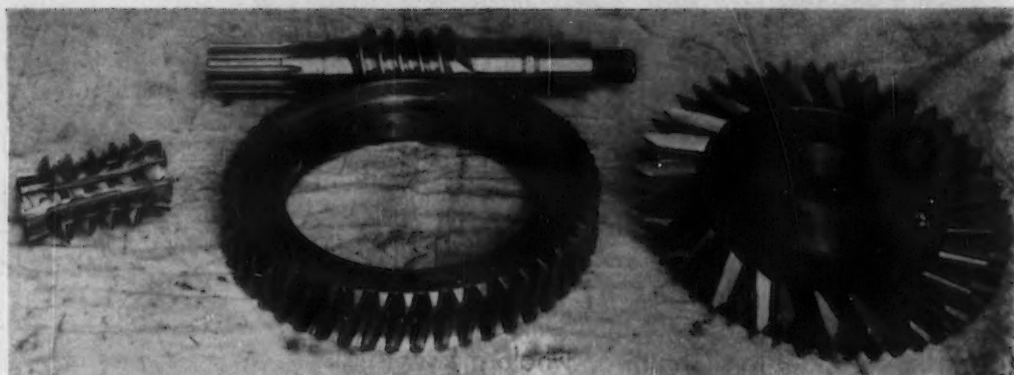
Obviously both the worm and wheel had to be generated by hobs or cutters which simulated the



PAIR of special machines developed by Michigan Tool Co. for the production of super-charger Cone worm gears. With two hobs per work-piece, the production time is halved.

o o o

CONE worm gear set, together with the hobs used to produce them.



Area-Contact Worm Gears

mating gear. But no matter which way such cutters were fed into the blanks, whether tangential in the direction of or at right angles to the hob axis, or by feeding the centers toward each other, the tooth form which looked so good on paper could not be obtained. The trouble was that while the cutter was being fed into the work, it was cutting away, by interference, mate-

The solution of the problem by Mr. Cone, and the development of production methods and equipment to make the gears in any sizes, ratios or quantities by the Michigan Tool Co. and Gould & Eberhardt, was based on the recognition that no cutting of the final tooth form must take place except with the hob and work-piece on the same centers as those of the worm and



THE same machine can be used interchangeably to produce both worm and worm wheel, as shown in the illustrations. One shows the worm wheel teeth being hobbed and the other the hobbing of the worm thread.

• • •

rial which was really part of the desired final tooth form. The only place at which the form was correct was at the center plane of the worm wheel. Instead of having complete surface contact, there was again line contact, only this time the line was at the center plane, down the flank of the teeth rather than across the face.

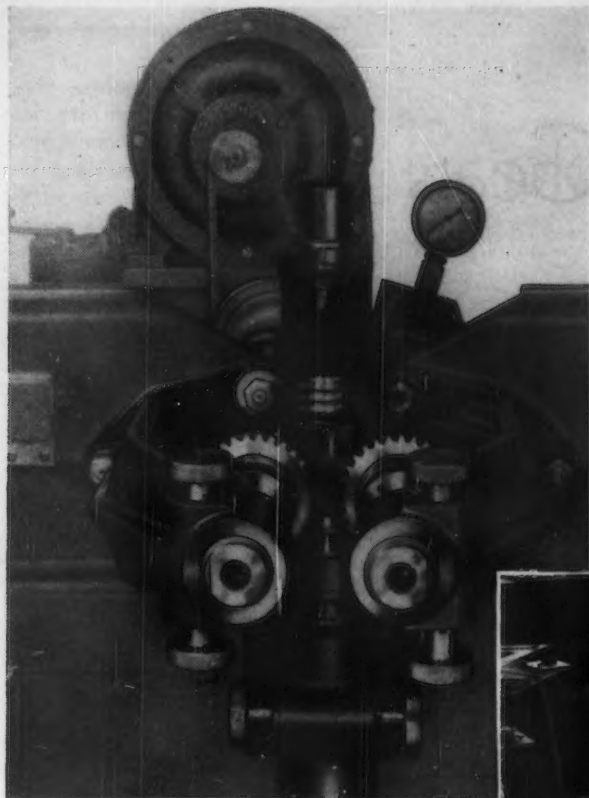


ONE worm gears, the teeth of which are in surface rather than line contact, were developed to provide low unit pressures, with less wear; high load-carrying capacity; and high thermal rating. Success of the design awaited development of a manufacturing method and equipment, both of which are dealt with in this article. The illustrations are of equipment at the plant of the Michigan Tool Co., Detroit.

wheel when assembled in service operation.

To cut the teeth on Cone worm wheels, hobs are used which are identical in form with the mating worm, except that the thread, or teeth, are thinner in cross-section. The hob first cuts grooves in the wheel blank by feeding the centers of the work-piece and cutter toward each other. This might be considered a "roughing" operation. The groove thus cut is materially narrower than required when the wheel teeth are finished, but, on the other hand and for the same reason, no material has been cut away from the blank that should be left on for an eventual correct tooth form.

In other words, the cutting away of stock due to "interference" has been confined to that part of the stock which eventually would have



AT LEFT
SPECIAL lapping machines have been developed for gears where maximum initial quietness is vital. The lap at the left drives the worm in the center, lapping one side of the worm thread. The worm in turn drives the lap at the right, lapping the opposite face of the worm thread. The load is applied to the lap at the right and is adjustable. The same machine can be used to lap the worm wheels, by using two worm laps, left and right.

pressure angle, etc. On the hobs, while the cutting teeth are thinner, they also have straight-line flanks in section, and these are made tangent to a circle of exactly the same diameter.

It is thus seen that the correct tooth form will be generated automatically, irrespective of the thickness of the teeth on the hob or the amount of stock being removed in finishing. Furthermore, the hob can be reground time and again without influencing its effectiveness, so long as the flanks are always ground tangent to the same base circle.

For large-scale production, machinery has been developed employing two hobs per work-piece. These
(CONTINUED ON PAGE 60)

to be removed anyway. The objective of this portion of the operation, of course, is to bring the cutter and work-piece into proper axial relationship.

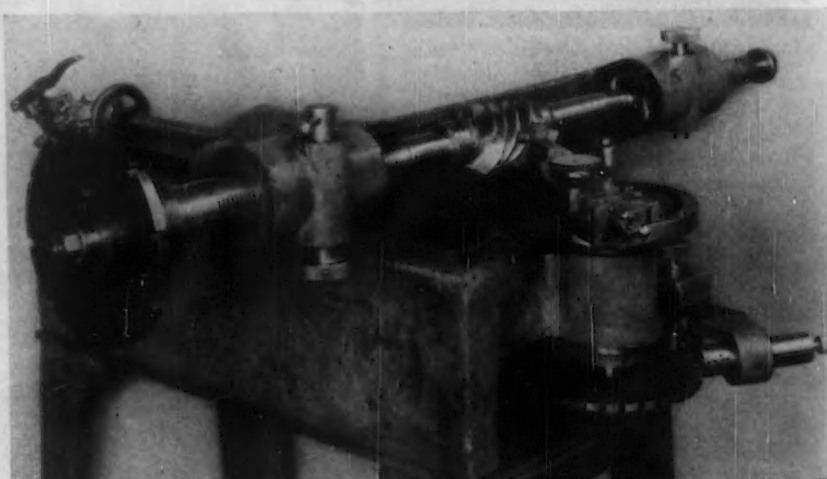
Having reached the correct depth of cut, the feed now becomes rotary. Either the hob or the work-piece is rotated slightly about its own axis, it being immaterial which, while both hob and work-piece are rotating on the machine. The feed thus is similar to the way in which the gear would take up its own backlash, if clearance space existed instead of stock to be removed. Stock removal to get correct tooth form is thus obtained by shaving the material in layers off the tooth or thread flanks until final tooth form and dimensions are reached.

On machines equipped with single hobs the hob is angularly fed or rotated in one direction to face one tooth flank, and the feed is reversed to finish the flank on the other side of the groove.

The reason why both correct tooth form for surface contact and correct tooth dimensions can be obtained simultaneously is to be found in the tooth form. In Cone gearing the flanks of both the thread on the worm and the teeth on the wheel show up as straight lines when a plane is passed through the axis of the worm. All these lines, moreover, are tangent to a circle about the axis of the worm wheel, the diameter of the circle depending on the desired



FOR small-scale production of large gears, tool cost can be reduced by using cutters having only one wrap, instead of a complete hob.



PRODUCTION equipment developed by Michigan Tool Co., includes special checking devices, the one here shown being a special set-up for checking lead pressure angle, and spacing of worm threads.

Giant Plastic Molding Press Produces Large Weighing Scale Housings



WIDER and more diverse utilization of molded plastic parts is foreseen in the recent installation by the General Electric Co. of the giant new press shown in the accompanying illustration. The machine is now in production on what is said to be the largest plastic molding ever made in commercial quantities, namely, the housing for a new type of weighing scale for retail merchants, which has just been announced by the Toledo Scale Co. This scale case measures $17\frac{3}{4} \times 14\frac{5}{8} \times 11\frac{1}{2}$ in. The technique employed in molding a part of its unprecedented size is said to be applicable to the production of many other parts.

The new product, named the Toledo Plaskon Duplex Scale, is a new model of the Toledo Duplex scale. Its case is made of Plaskon, a urea formaldehyde plastic produced by Toledo Synthetic Products, Inc., and it is unusually light and durable. The total weight of the scale is but $55\frac{1}{2}$ lb., of which only $8\frac{1}{2}$ lb. is in the case as compared with the 50 to 75-lb. cast-metal housings used on preceding models. In addition to reducing the weight, the use of the molding provides a gleaming white exterior surface, a surface which is more

than a finish because the case is solid Plaskon all the way through.

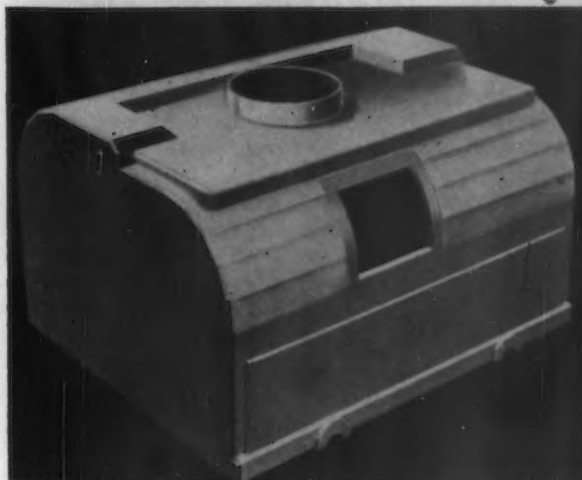
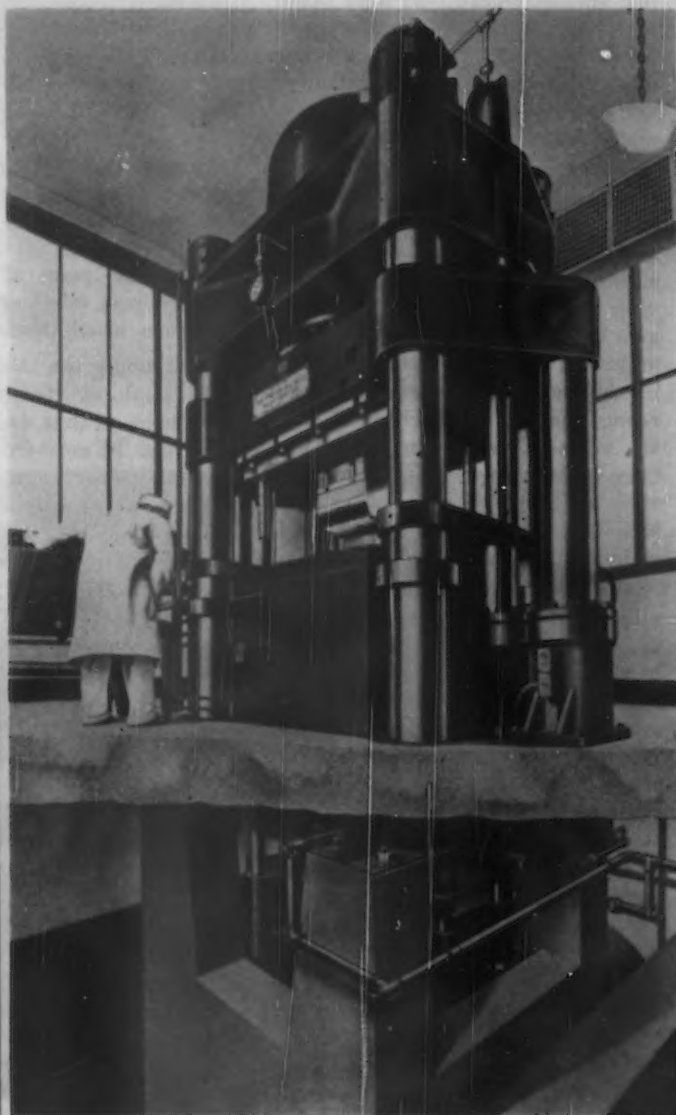
Press Weighs $44\frac{1}{2}$ Tons

The hydraulic press which the G-E plastics department uses to produce the molded case is said to be the largest of its type. It is 22 ft. high and weighs 89,000 lb. It has nine hydraulic cylinders operating at pressures of 1500 and 3000 lb. per sq. in. One cylinder operates the main pressing ram

which is 36 in. in diameter and capable of exerting a force of 1500 tons and which moves downward to perform the molding operation. The other cylinders operate rams used to provide the desired flexibility of performance needed in molding such large pieces as the scale case. The press was built to General Electric specifications by the French Oil Mill Machinery Co., Piqua, Ohio. Despite its size, the press can be operated very

AT RIGHT
HYDRAU-
LIC press
employed for
molding hous-
ings for new
Toledo scale.
The housings
are said to
be the larg-
est plastic
molding ever
made in com-
mercial quan-
tities.

BELOW
WHITE
Plaskon
scale case
made on the
molding press.



rapidly, the main ram traveling as fast as 100 in. per min.

The mold used with the press to form the scale case is likewise of huge proportions. It weighs 7 tons. Its overall height, when closed, is 42 in. and its longest dimension, that of the stripper plate, is 60 in.

During carburizing and heat-treating of the mold, which was done to develop the proper surface hardening for the molding operation, it was necessary to resort to special methods of handling in order to avoid distortion, cracking or nicking—as the mold had already been machined to size. This work was done by the Lindberg Steel Treating Co., Chicago.

Press Room Air-Filtered

As the molding powders used in the Plaskon Scale case are almost a pure white and as a single speck of dirt in one loading of the compound might spoil the entire molding, special precautions were taken to prevent such an occurrence. Both the main press room and the finishing room were neatly painted and well lighted, and provision made for scrubbing and flushing to assure cleanliness.

Also, to guard against the circulation of any dust or dirt in the air, an air-filter system was designed for these two rooms to provide an abundant supply of clean air, free of contamination. From a bank of glass-wool filters, located in the basement under the press room, the air is discharged into the rooms through an air-supply duct having openings of such design as to prevent turbulence which might scatter the powdered molding compound.

Moreover, since the press room is airtight, a slight pressure is built up which prevents infiltration of unfiltered air when the door is opened. With this system a maximum of one air change in the press room a minute can be obtained. A similar system of small capacity is provided for the room in which the molding compound is stored.

Also cooperating with the Toledo Scale Co. in the development of its new product were the Aluminum Company of America and the Bausch & Lomb Optical Co. The former contributed a new aluminum alloy, paper thin, for the chart of the new scale, and the latter developed special lenses for the scale.



AT the right, Fig. 1, is a machine illustration which might easily be credited to accumulated engine lathe progress during industrial periods prior to 1915. A machine of about one-half weight, if compared with 1935's model; sliding spur gears and steel parts not heat treated; bearings devoid of anti-friction advantages, yet a model with maintained popularity on service work.

The 1935 model, at right, Fig. 2, is the result of lathe emergence from the confines of narrow purposes, and of lathe development into a productive adjunct to shop activity. This because, fundamentally, the lathe possesses much in simplicity and offers much in the way of possibilities for production fixtures use. Its utility thereby presents opportunity for gaining reduced-investment advantages while retaining at least a highly important part of any already determined, maximum productivity for use when needed.

Although the 1935 machine is the same rated size as its 1915 predecessor, it is double the weight and has 16 mechanical changes of spindle speed, over a very wide range, as compared with eight changes on the 20-year-old model. The bed is semi-steel with tensile strength at 55,000 lb., compared with 15,000 lb. for Fig. 1. The thread and feed range is over twice as broad. The 18-in. lathe of 1915 handles only a 5-hp. motor, whereas the 1935 machine of like capacity will take the output from a 20-hp. motor. Anti-friction bearings are employed throughout and all steel parts are scientifically heat treated.

Many typical toolings on a 1935 lathe are illustrated in a group of photographs submitted by the Monarch Machine Tool Co., Sydney, Ohio, lathe builders. Some of these are used here. They represent a few of the real productive developments in an engine lathe as built by Monarch and designated

The Modern Engine Lathe

By L. M. WAITE

o o o

as "Specially Tooled." Such equipments are, in many instances, winning competition against highly productive, limited purpose machines. The illustrations used are necessarily few in number insofar as total combination tooling possibilities are concerned.

Prior to heightened activity on the part of lathe builders as indicated by the spread of illustrations Fig. 1-2, mechanical design-ingenuity tended to lessen lathe utility and to place that tool, more or less, in a "necessary-evil" classification; at least so, in production terms of the "new era" period, during which single purpose machines having only mass quantity capabilities were considered by many to be the necessity of the day and the probable manufacturing requirement of the future.

In taking up the production challenge of single-purpose machines, lathe builders were quick to sense reduced costs, through lesser capital investments and through greater machine flexibility, featuring wider use of units and fixtures in connection with low cost basic design. The depression arrived at the psychological time, for it made flexibility a paramount necessity in profitable production of multiple parts under severe fluctuations in demand.

Not only have these modern lathes found their way into the smaller shops, but also they have invaded quantity-production lines in enormous plants, where they are said to be a major factor in the ability of many such plants to quickly orient production to demand. This available flexibility is naturally of the greatest service in those plants and industries which must cope with demand-cycles, whatever their causes.

Many students of machine tool

Lathe in Production Competition

design point to lathe-development activity, within the time range covered herein, as directly responsible for the "unit" trend which has become a feature of, and has gained

much favorable reception for, new machine tool design. Whether this be so or not, the new economic edict seems to be that greater flexibility is a machine tool necessity and

that it must be closely identified with reduced capital investment and relate to quantity variables and not to any cost-increasing reduction in the speed at which work

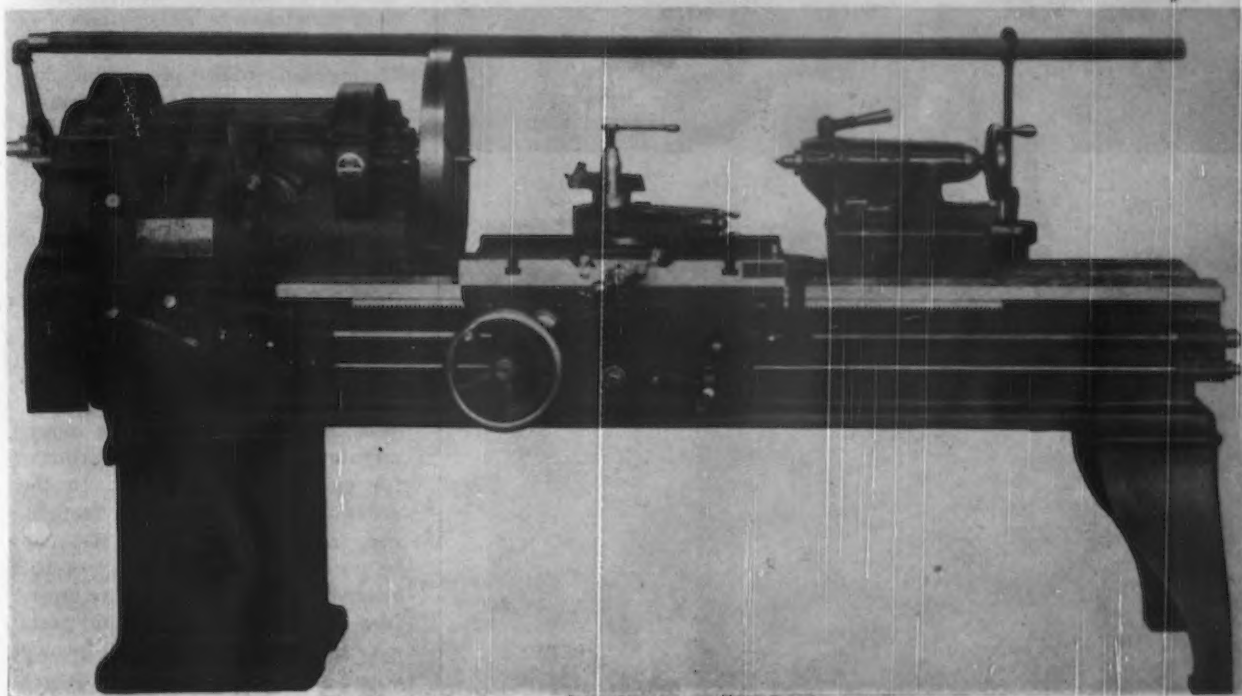


FIG. 1

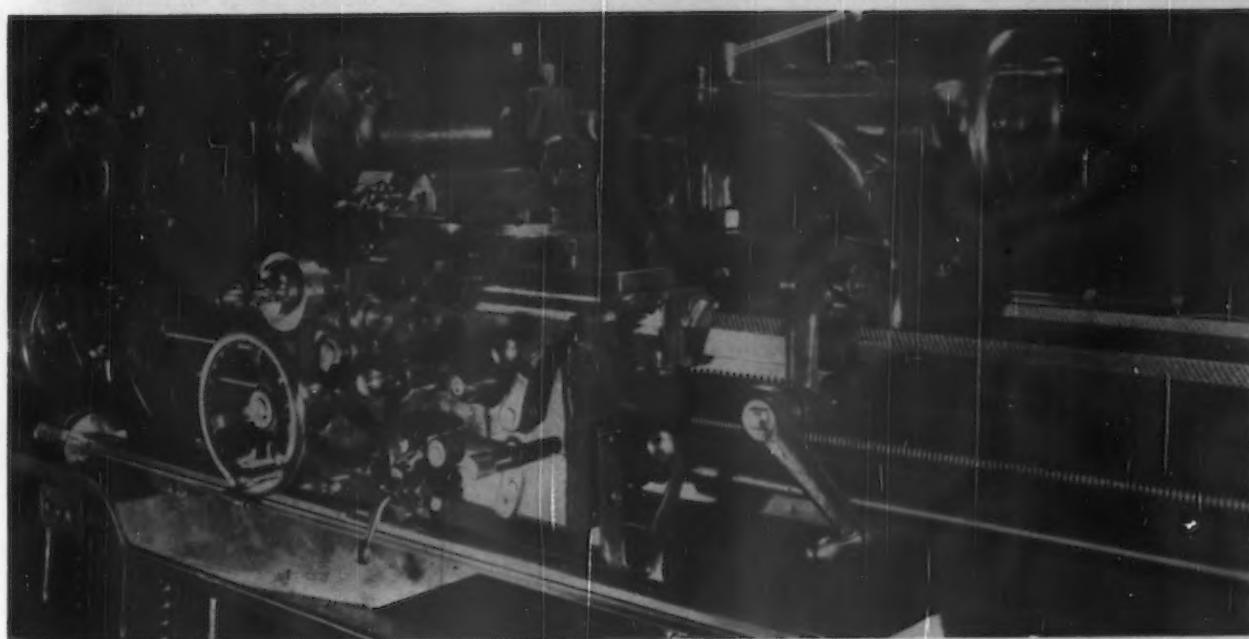
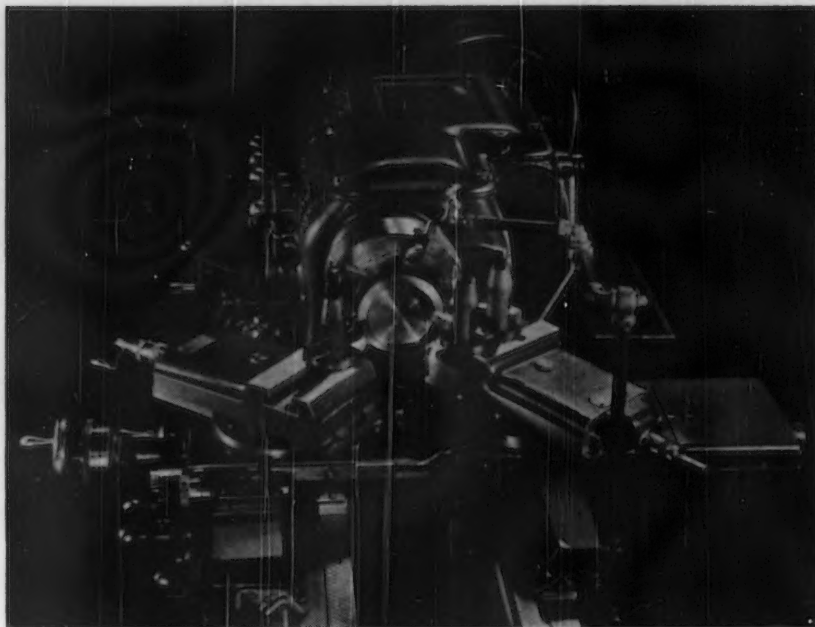


FIG. 2



ABOVE

FIG. 3. Single and double power-angular-feed compound rests are units which provide extreme flexibility for angular machining operations.

• • •

AT LEFT

FIG. 4. Equipment for single boring operations, using either power or hand operated chucks, is much utilized, for example in sleeve boring.

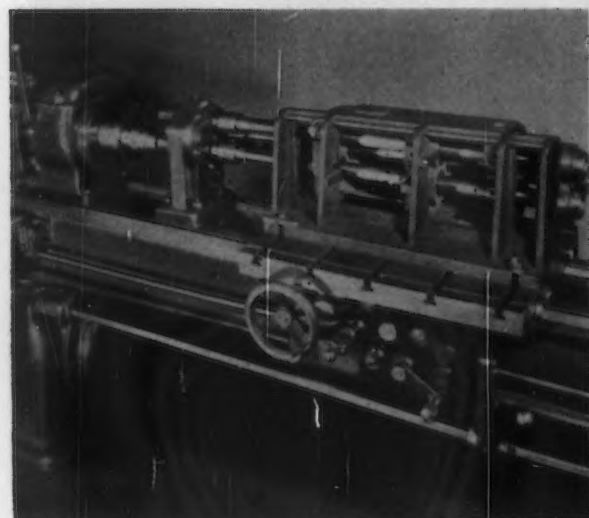
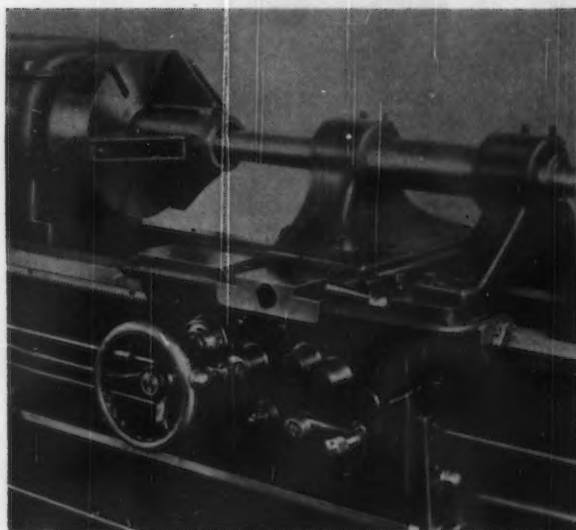


FIG. 5. In multiple boring, power is taken from the main spindle to multiple boring spindles, through a driving head, set up on the lathe bed.

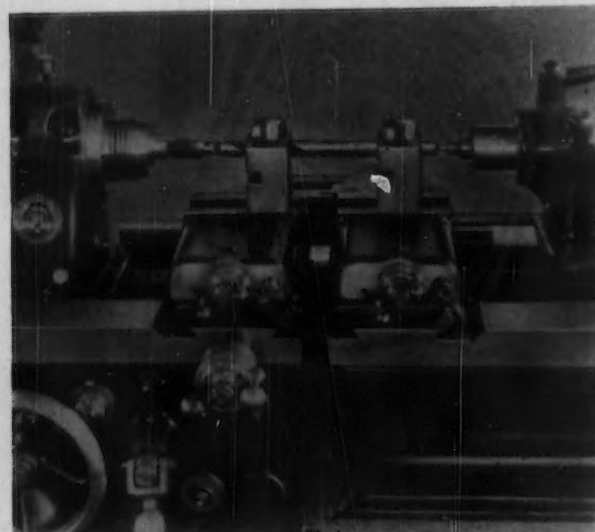


FIG. 6. An automatic reversing mechanism can be employed with double carriage set-ups such as turning both taper and straight sections on drill blanks.

shall be turned out, once it is started. On the other hand, there are those who contend that the unit trend is experimental, overdone, and temporary. Yet it must be borne in mind that good machine tool design is always contemporary and based upon readings of the lessons of shop experience.

The working out of the substitution principle is a cost reaction to our hard-learned lesson on manufacturing necessity for gaining a quicker control over production, and thereby over inventory.

This new unit and lathe competition, particularly as presented in the semi-automatic lathe and in the specially tooled lathe, embodies among other provisions the following: Single or double front and rear cross-slides which may carry forming and cut-off tools; single or multiple automatic length or cross-feed stops, with templet control when desired; and a rapid traverse carriage upon which any selected type of turret, for end-tool work, may be mounted. Both single and double power-angular-feed compound rests are available. These give added flexibility for many angular machining applications; for example, bevel gears. In the utilization of this tooling feature, Fig. 3, either compound rest can be positioned independently of the other by means of a regular cross-feed handle. Both compound rests may be fed in or out simultaneously or independently under power cross-feed. The angular feed can be cut out at will. The rest can be

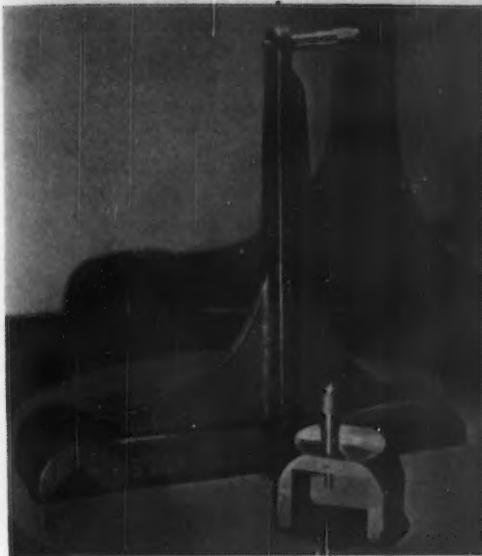


FIG. 7. Monarch micro-gaging method of tool setting employs a small gage for outside tool setting. The larger gage is for setting the boring bar.

positioned out of the way when not in use, a carriage cross-bridge extension being provided for this purpose. Disengagement of angular feed is easily effected, for either or both rests, permitting that either may be otherwise employed in stock removal. Rests can be connected and used for cross-feed turret mounting or utilized for horizontal-feed boring, reaming and facing operations on many classes of work, including wheels, hubs, etc. A double-friction apron provides mounting for automatic trips; the stops may have micrometer adjustment.

Equipment for boring operations, in conjunction with either hand or power-operated chucks, provides a set-up sufficiently fast in production to have warranted many installations for production use, in the rough-boring of jobs such as cast iron cylinder sleeves, Fig. 4. Rigidity permits the use of cemented carbide tools. One operator takes care of two machines, facing each other.

In horizontal boring operations a platen-type carriage may be used, Fig. 5. On this work-boring fixtures are mounted. Power is supplied to multiple-boring spindles from the main spindle, through a multiple-driving head, set up on the bedways. A double-friction apron provides mounting for automatic tripping against stops which may have micrometer adjustment.

The employment of double carriages presents useful, simultane-



FIG. 8. The small dial opposite the etched instruction plate reads in inches. The cross-feed micrometer dial reads in thousandths. All readings are in diameter, not radius. The convenience in tool setting is obvious.

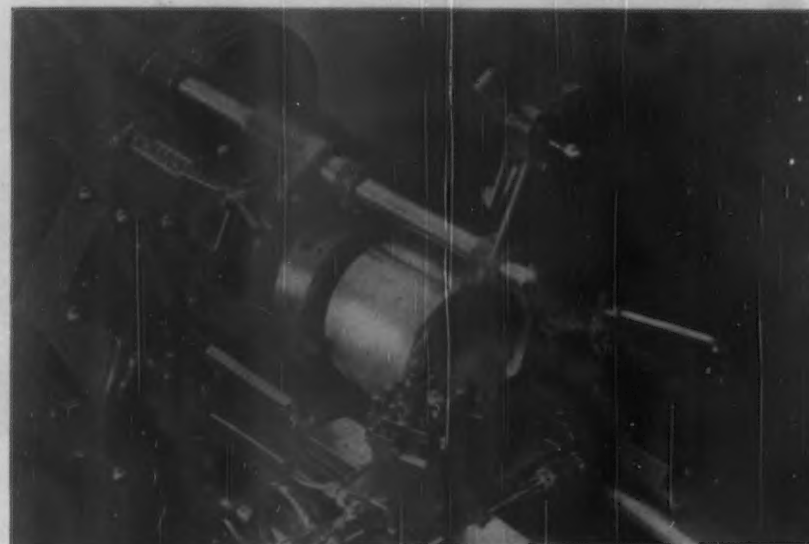


FIG. 9. One of a battery of lathes for machining the top of a cast aluminum kettle with such precision that it will be steam tight. Multiple tools, automatic stops, and angular feed serve to complete the work within a period of time said to be one-quarter of that consumed by any previously tried method of machining. The overhead spider swings to a down position for conveniently centering the kettle in the loading operation. It then swings up out of the way.

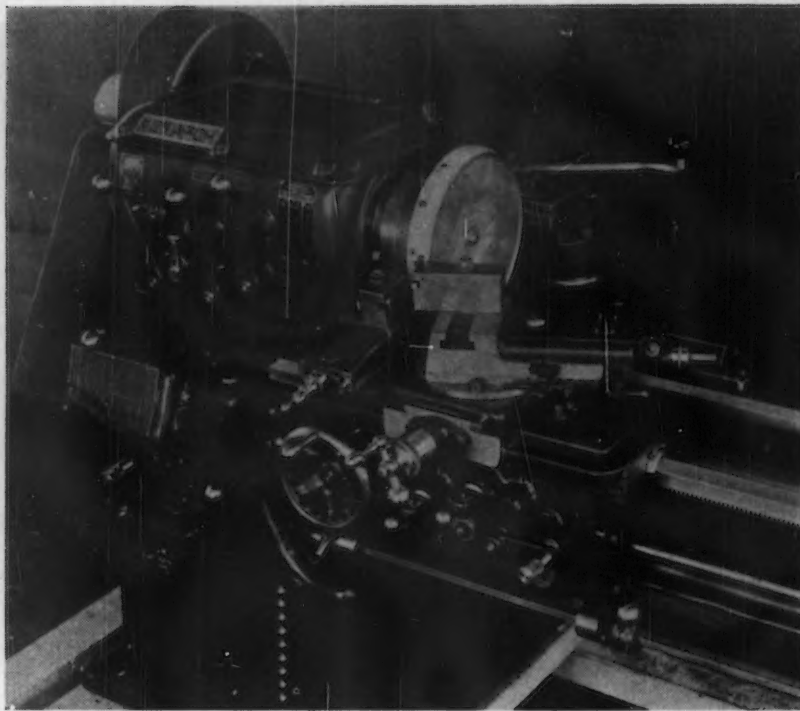


FIG. 10. One of a battery of standard specially tooled 14-in. lathes equipped for machining the aluminum lid of steam cookers. Specifications call for steam tight fit without gaskets. It is said that production was stepped up 400 per cent over previous machining methods. Equipment investment is reported as extremely low.

ous work combinations, such as the taper-shank and straight-section turning of drill blanks, Fig. 6. For such tooling combinations an automatic reversing mechanism is provided for in avoiding constant

operating attention necessary. Through a drive taken from the spindle, for operating a master cam, irregular shaped work, chuck-held, is rapidly handled. Automatic cross-feed diameter, as well

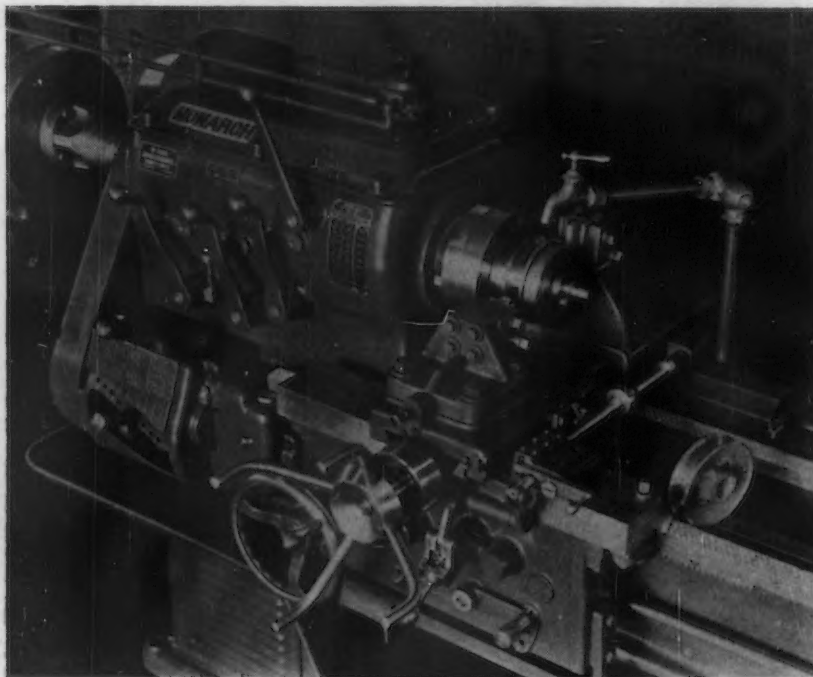


FIG. 11. One operator handles two 16-in. lathes in the machining of bronze trolley wheels. The equipment employed includes—air-chuck; separate front and rear tool slides, with right and left hand cross feed screw; automatic cross feed diameter stop, which disengages power cross feed to both tool slides when the correct diameter has been reached. The carriage remains in a fixed position clamped to the bed.

as automatic length-feed stops, contribute to time saving. Such types of equipments offer a close approach to fully automatic operation on either a low production or on a large number of pieces.

Through connected gear drive from headstock-spindle to tailstock-spindle, off-center facing, or work requiring like set-up, can be disposed of.

Helical gears; motorized headstocks, completely Timkinized and having wide speed ranges; force lubrication and forged spindle with integral flange are other features which belie many conceptions of today's lathe utility.

The following captioned illustrations are of the new Monarch micro-gage method of tool setting and of troublesome jobs which have been readily handled, on either production or short-run basis, by lathe units such as have been described above.

New Trade Publications

Pumps.—Acme Machine Products Co., Inc., Muncie, Ind. Catalog No. 140 illustrating and describing Acme Sure-Flow coolant pumps which feature priming after installation without submerging part of the pump. Cross-section diagram construction of direct motor and belt-driven units are included.

Sound Control.—Johns-Manville, 22 East Fortieth Street, New York. Brochure covering sound control in air-conditioning systems, mechanical refrigerators, oil burners and other equipment. Special treatment is given the subject of vibration isolation platforms for motors, fans and the like.

V-Belt Drives.—Gates Rubber Co., Denver.—Catalog of 48 pages covering installation and operation of V-belt drives. A section includes care of these drives and outlines a way of checking tensions. Other sections give instructions for the design of V-V drives, quarter-turn drives, double-V drives and V-flat drives.

Porcelain Steel Business Units.—Porcelain Steel Buildings Co., Columbus, Ohio. Attractive booklet of 24 pages showing the use of porcelain steel as an exterior finish of modern business units. Illustrations of porcelain steel buildings in color and business units in actual service are also given.

Belting.—Manhattan Rubber Mfg. Division, Raybestos-Manhattan, Inc., Passaic, N. J. Bulletin describing Condor Whipcord brand of endless transmission belting; also data on how to determine the length of endless belts and horsepower tables.

Head and Eye Shields.—Chicago Eye Shield Co., 2300 Warren Boulevard, Chicago. Catalog covering industrial protective equipment, including chipping, dust and welding goggles, respirators, sand blast masks, helmets, shields and grinder guards.

Vibrating-Push Conveyor

Handles Hot and Abrasive Materials

By DR. H. E. WOISIN
Engineer, American Lurgi Corp.,
New York



THE accompanying illustrations show an improved conveyor which employs the vibrating trough principle, and is especially suitable for use in chemical and metallurgical plants for conveying hot or abrasive solids and for meeting special handling problems involving drying, cooling and

screening. It is not recommended where a simple belt conveyor is capable of doing the work; its field of application is rather where the belt-type unit is inadequate because of the abrasive nature or high temperature of the material to be handled, or where combination service, such as conveying and cooling, etc., is required.

In the vibrating trough, which when introduced provided a basically new form of conveying, the trough is slowly pushed forward and then returned rapidly to its starting point. The original design was subsequently modified to give more of a throwing action, and later a "vibrating-push conveyor" was brought out. In this, a driven

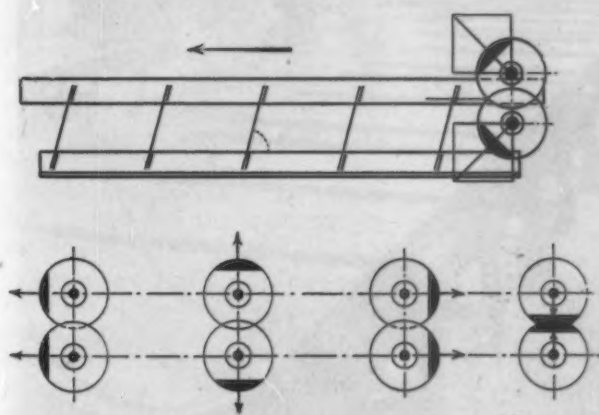


FIG. 1. Diagram showing arrangement of vibrating-push conveyor employing improved unbalanced drive. The trough (the upper member) is coupled to several unbalanced wheels and is supported by inclined members that are fastened to the base. The oscillating movement of the drive is transferred to the trough and converted into a throwing motion by means of the inclined members. Small but rapid movement of the trough results in an almost flowing movement of the material.

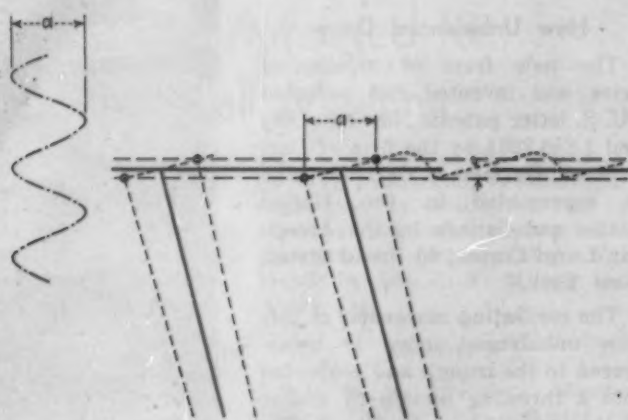
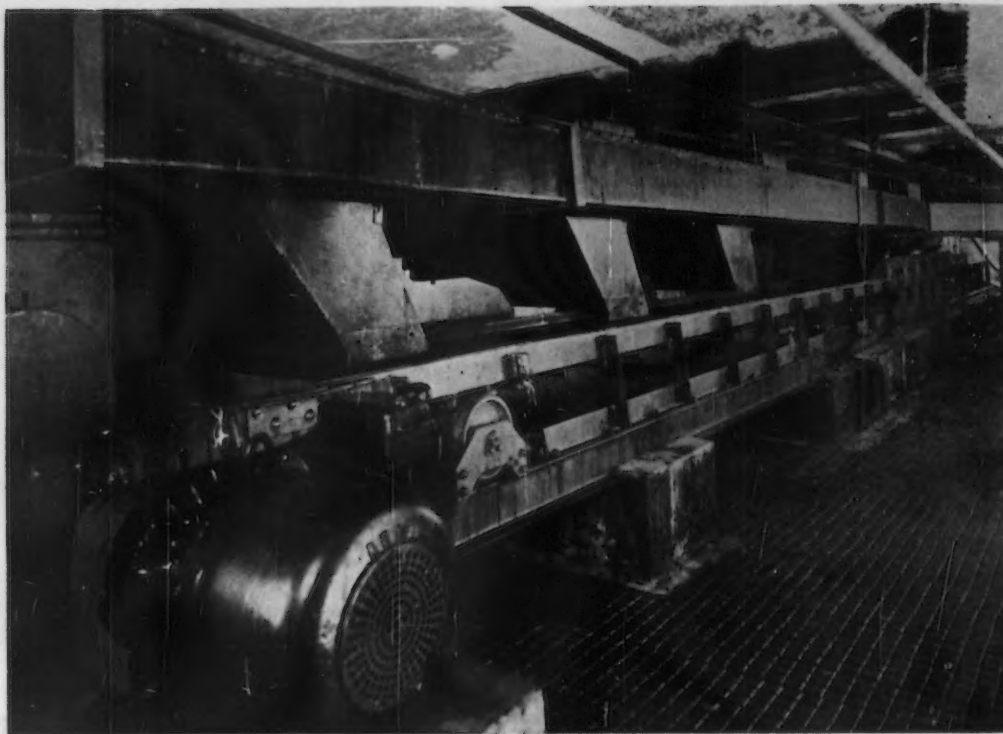


FIG. 2. Diagram of the throwing motion of the inclined springs.



AT LEFT
FIG. 3.—Installation of vibrating-push conveyor with several feed hoppers.

• • •

BELOW
FIG. 4.—A curved trough is employed for materials having a temperature above 500 deg. F. In this case the drive is located at the middle, leaving both ends of the trough free of expansion.

unbalanced wheel was coupled to a trough which was mounted on inclined springs.

The vibrating-push conveyor described in this article employs the same principle but features a new form of unbalanced drive. Here the trough is coupled to several unbalanced wheels mounted in pairs one above the other, instead of a single wheel, so that the unbalancing weights exert maximum centrifugal force in a horizontal direction while damaging vertical forces are neutralized. The arrangement is shown in Figs. 1 and 2.

New Unbalanced Drive

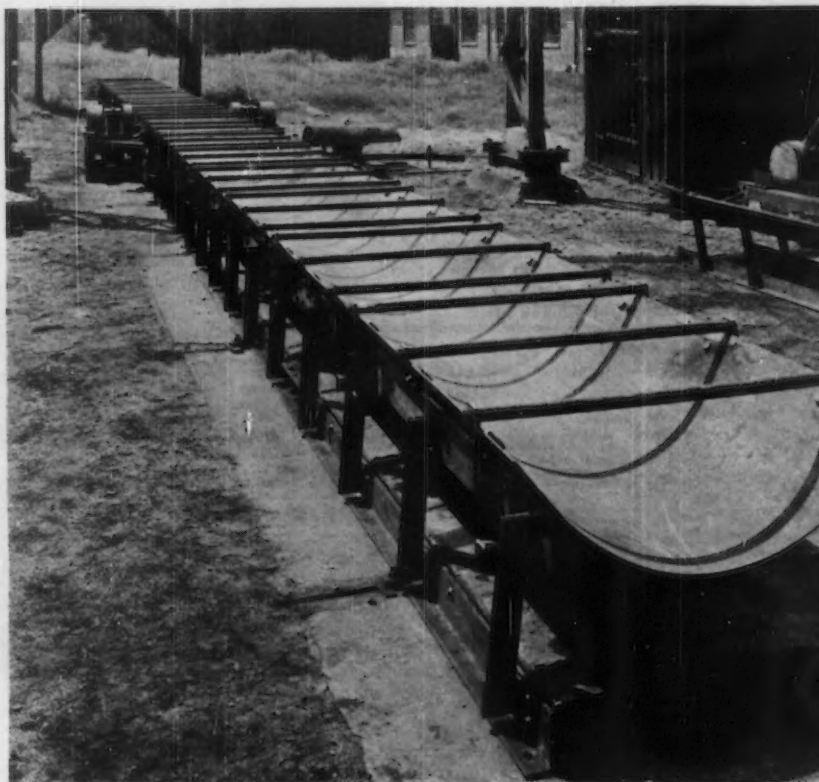
The new form of unbalanced drive was invented and patented (U. S. letter patents Nos. 1,810,882 and 1,858,328) by the firm of Carl Schenck, Darmstadt, Germany, who is represented in the United States and Canada by the American Lurgi Corp., 80 Broad Street, New York.

The oscillating movement of this new unbalanced drive is transferred to the trough and converted into a throwing motion by means of the inclined springs, Fig. 2. The distance of throw depends on the angle of the throw and the magnitude of movement of the trough. The speed of travel or flowing speed for the material depends upon the distance of throw and the number of oscillations or the number of

rotations of the wheel in a given time. The angle of throw and the number of oscillations are determined from practical experience, whereas the magnitude of movement is adjusted by changing the weight of the unbalancers on the wheels to suit the material being handled.

Small but rapid movement of the

trough results in an almost flowing movement of the material. Three outstanding advantages of this form of conveyor are: 1—Uniform conveying and simultaneous high capacity; 2—minimum wear and tear on the trough, and 3—minimum stress on springs and fittings of the trough. Figs. 3 and 4 show the arrangement of troughs



for conveying different types of materials.

As stated above, the vibrating-push conveyor consists essentially of the drive and the trough mounted on springs. The drive unit, shown in Fig. 5, is usually direct-coupled to the motor and can be attached either to front or rear of the trough, when it becomes a "head drive," or to the middle of the trough as a "center drive." The "head drive" is suitable only for single or end troughs. When several troughs are connected in series, the middle units must have a "center drive."

The trough element consists of an upper swinging part, supported by the inclined springs which are made of spring steel and fastened to an immovable base. The trough is made up of sections, which may be easily changed, either for renewal or for the conveying of materials of different types and temperatures.

Three types of trough are commonly used. One is rectangular, for moving cold granular material; another has a slightly curved bottom, for granular material containing a small percentage of dust and also for materials up to a temperature of 500 deg. F., and the third is a curved trough for moving material above a temperature of 500 deg. F. This trough is rigidly attached to the drive at a point in the middle of the trough, leaving both ends free for expansion.

Hourly Capacity Up to 1500 Cu. Ft.

Where material is to be heated or cooled while being conveyed, a circular tube or a covered trough may be used. Usually it is made of mild steel, but troughs of a hard steel or a heat-resisting steel may be employed.

In length the trough may vary from a few feet up to 130 ft., depending on requirements.

The capacity of a vibrating-push conveyor of the type described may be anything up to 1500 cu. ft. an hour. It depends upon the size of the trough and the rate of flow, and also upon the specific characteristics of the materials to be moved, such as size of grain, hardness, and moisture content. Only experiment can determine the influence of these latter factors.

Granulated materials are, of course, easy to move, and flowing speeds of 35 to 40 ft. per min. can



FIG. 5—The drive unit employs several unbalanced wheels instead of only one. It is usually coupled directly to the motor.

be easily maintained. This speed can be greatly increased, but only at the expense of quiet operation and of increased wear and tear on the trough. For material that has to be carefully handled, the flowing speed can be reduced as low as 20 ft. per min.

Very sticky or very wet material cannot be moved on this type of conveyor, because the vibrations bring the water to the surface and the then sticky material clings to the bottom of the trough. Moist or wet, non-sticky solids may be handled, at least if the water is not in combination.

Material containing a large proportion of dust or that is in a very fine state may offer difficulties, particularly if a large amount of

air is held in the mass. In this case the material is not thrown ahead, but rather swims about in the trough without forward movement. As stated above, heat does not affect the operation of the vibrating-push conveyor so long as the trough is properly constructed to allow for expansion, etc.

Operates at 1500 Deg. F.

The vibrating-push conveyor is well suited for use in metallurgical and cement plants where hot, roasted materials or sintered clinkers have to be moved, for it can be used well above 500 deg. F.; in fact, several are in operation at temperatures ranging from 1100 to 1500 deg. F. For such service it is considered advisable to install the drive as far away from the hot zone as possible and to construct the trough for maximum expansion.

Acid-carrying materials, such as encountered in the chemical industry, may be conveyed without difficulty by means of a trough of an acid-resisting steel. Because the material flows in a uniformly thin layer, and is being continually loosened by the throwing movement, it can be dried, heated or cooled while being moved, by passing hot or dry air over it. By inserting a screen in the trough, material may be sorted; in fact, such a trough is often attached to a crushing machine for simultaneous sorting and conveying the material.

Technical Sessions Arranged for Welding Society Fall Meeting

TWENTY-TWO or more papers have been planned for the seven technical sessions of the fifteenth fall meeting of the American Welding Society, to be held at the Palmer House, Chicago, Sept. 30-Oct. 4. Committee meetings, a general session and the annual banquet, the latter on the evening of Oct 3, have also been arranged, as well as inspection trips on the morning and afternoon of Oct. 4.

The technical program of the Society, of which J. J. Crowe, Air Reduction Sales Co., is president, follows:

September 30

2:30 p. m. Presiding officer—J. J. Crowe, president. Bridge Weld-

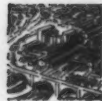
ing—a Review of the Literature, by F. H. Frankland, vice-chairman, committee to study welding of highway and railroad bridges; Nitrogen in Metallic Arc Weld Metal, by Dr. J. W. Miller, Reid Avery Co.

October 1

9:45 a. m. Presiding officer—John Cornelius Penn, dean of engineering, Armour Institute of Technology. Fundamental Research in Welding: Spot Welding Problems, by J. H. Zimmerman, Massachusetts Institute of Technology; Bend Testing of Welds—a Summary, by M. F. Sayre, Union College; Advantages of Welding in

(CONTINUED ON PAGE 24)

By **EDGAR W. FUNK**
*Assistant Sales Manager, Nubian
Paint & Varnish Co., Chicago*



THE eagerness with which manufacturers of metal products seek and adopt improved finishes indicates a lively appreciation of the importance of the finish in promoting sales, as well as in assuring customer satisfaction. The soundness of this attitude is readily apparent to anyone who considers the fact that regardless of the care exercised in selecting and processing metals, in the case of most products it is the finish alone which must meet the critical inspection of the prospective buyer. Given a product embodying a reasonable degree of mechanical perfection, it is often the manner in which the finish stands up in daily use that determines the satisfaction derived by the customer.

Recent progress by the paint industry has made available to the manufacturer of metal products ample opportunity to use progressively better finishes. In fact, developments have come so swiftly that the metal manufacturer's difficulty lies not in any lack of improved finishes, but in keeping up with the new and better products constantly being offered him.

Of course, there are certain metal finishes which are more or less standard and which go on usefully serving their purpose year after year. Black japan and rubber finishes are typical of this class. But in the field of baking enamels, which are largely used by manufacturers of metal products, the changes have been exceedingly rapid.

Synthetics Come to the Front

About five years ago, the conventional oil type of baking enamel began to be quite generally replaced by synthetics. The synthetics which then came into use were a great improvement over oil enamels. The best of them were characterized by extreme hardness, flexibility, and adhesion to metal in one coat work. They produced this harder, tougher film on a shortened baking schedule, running in most cases about one hour at 225 deg. F. Light tints held their color when baked on this

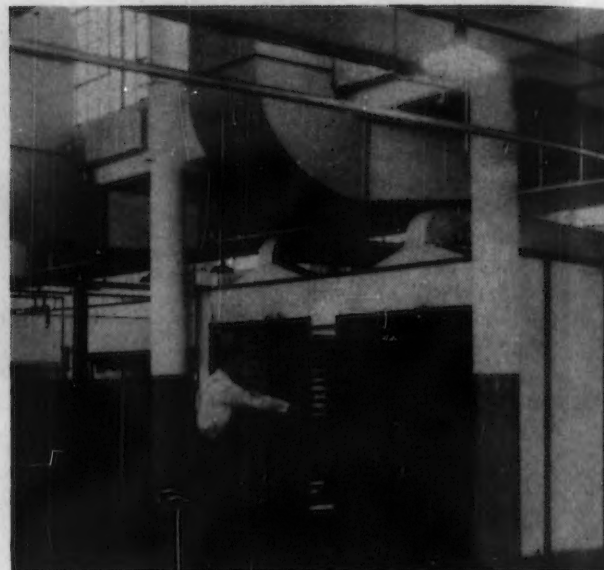
schedule, something not found in the older finishes. The synthetics retained their toughness and durability over an indefinite period of time, which was not true of most oil enamels. Now there is a new synthetic on the market which is so far advanced over the older types that it is already replacing them for many purposes.

High-Bake Synthetic Enamel Is Latest Development

This latest development in industrial finishes is a high-bake synthetic enamel. A few years ago, finishing room foremen would have regarded with open skepticism anyone who proposed to furnish them a white enamel to bake at 225 deg. In oil enamels, a temperature of 180 deg. F. was about the highest which could be used for whites without producing discoloration from heat. Today, the new high-bake synthetic enamels can be baked at 275 to 300 deg. and

will produce finishes having a pure white color which could not be obtained with the older types of enamel even at much lower temperatures.

The new high-bake synthetic enamel has a pleasing luster despite the fact that in any finish higher baking temperatures tend to cut down the gloss. It is tough and hard, showing up exceedingly well under impact and abrasion tests. It has much better water and alkali resistance than earlier types



Paul Maehler truck train type oven used at Pines Winterfront Co. receiving vestibule are automatically moved into the oven, through heat
The oven is heated with hot air developed by a Maehler-Universal Volatiles given off in the oven during the baking operation are

Air in this finishing room is cleaned in an oil bath and maintained at foreign matter from

Attractive Finish Helps

PROGRESS in metal finishes has been rapid in the past few years. Synthetic finishes have rather generally replaced oil type baking enamel, because they produce a harder, tougher



for baking the new synthetic finishes. Loaded trucks placed in the the baking chamber, and delivered to a cooling vestibule at the other end. direct-fired gas air heater located above the main oven chamber. recirculated and burned in the heater. Bristol thermostats are used for control.

slightly more than atmospheric pressure to prevent dust or other blowing in.

Metal Products Sales

film with a shorter baking schedule. The latest development in industrial finishes is a high-bake synthetic enamel which, in some cases, is being substituted for porcelain enamel.

of synthetics. It has good adhesion to metal, so that it produces a satisfactory one coat finish, or can be used over primer for higher grade two or three-coat work.

Used on Stove Parts

Stove manufacturers were quick to realize the advantage of this new coating. Because this material did not discolor at temperatures up to 300 deg., it could be used on stove parts which formerly required vitreous enamel. By rede-

signing and insulating, stove makers are able to use the new finish even on stove bodies as well as legs and burner boxes, so that the total saving in the finishing operation as compared to porcelain is very substantial.

Refrigerator manufacturers have been attracted to the new finish because of its resistance to moisture, alkali, fruit acids, grease and butter. Permanence of color is also an essential feature for refrigerators, and this the new finish has to a marked extent. When first taken out of the oven, whites in this type of goods, if baked at maximum temperatures, may show a yellow cast, but they bleach out on exposure to light and air to a permanent clear white which is not further affected by either light or darkness.

When Is White White?

To those not used to working with whites, the concept of degrees

of whiteness is quite novel. Without giving the matter second thought, most people believe that they have specified a definite color when they say "white." But one needs only to compare the "white" paper on which this is printed with the "white" margin of a newspaper to get a very definite idea of the degrees of whiteness. There are whites with a creamy or yellow cast, red whites, blue whites, muddy whites which contain a streak of black, and a whole host of variations and mixtures of all of them.

This matter of purer white color is, of course, far from being either accidental or incidental to the other desirable features of the new high-bake finishes. It is something which was painstakingly developed by long and patient research in the laboratory of the paint manufacturer. Imagine, if you can, the feelings of this paint manufacturer when, upon proudly presenting his new product to the trade, he runs across an important prospect who likes the many good points of the material immensely, and is inclined to adopt it for his very considerable production, but refuses to use it unless it can be produced in the decidedly yellowish tint which is his standard color! Or this same manufacturer who has labored patiently to make his new finish flow out to a glass-like smoothness, and who is told by another prospective user that it is a fine product, but he cannot use it unless it is made to produce a finish with the oily ripple or orange peel effect characteristic of certain porcelain! Incidents like these keep life from growing dull for the paint men, but are not calculated to keep their hair from taking on an added degree of whiteness.

Cost Considerations

Users of industrial finishes have long since learned to consider finishing costs on the basis of cost per unit area coated. This basis for consideration is, of course, the only practical one, since industrial finishes are sold to the ultimate consumer applied to various products, and not by the liquid gallon. Because they are capable of covering from 25 to 33 1/3 per cent more area per gallon than earlier types, the new high-bake synthetics more than make up for their slightly higher prices. On the basis of cost per unit area coated,

they are actually cheaper to use than many of the older synthetic finishes.

In a recently published article*, Dr. Wilhelm Krumbhaar of Beck Koller & Co. states that on a rough estimate the volume of business in synthetic resin finishes has doubled every year for the past five years. A part of this increase has been at the expense of lacquer and the older types of enamel, but with the advent of the new high-bake synthetics even the field formerly held by porcelain is being invaded. The reason is that the new finish has been so far perfected that it is practical for use on certain products where formerly porcelain was the only coating which would give satisfaction. Thus the stove manufacturers have found it possible to substitute the new high-bake synthetic for porcelain because the new finish has more heat resistance in white and light tints than any organic coating previously developed.

Permits Use of Welded Metal

Naturally, the new synthetics cannot be used satisfactorily to replace porcelain in all cases, but where they can, the resulting advantages are substantial. Cost studies have shown that porcelain costs at least twice as much as a synthetic finish on the same product. Porcelain imposes limitations on design, size of parts and gage of metal which are not encountered when using the new synthetics. The latter finish permits the use of welded construction not possible with the former. Porcelain is subject to chipping with no alternative but to reject the chipped parts, whereas the new finishes are not subject to chipping and if they become injured through unduly rough handling, they can be readily touched up even in the field. Thus it will be seen that for applications where it is practical to use the new synthetics in place of porcelain, it is greatly to the manufacturer's advantage to do so.

How Synthetics Are Applied

No special nor unduly expensive equipment is required to handle the high-bake synthetic finishes. They can be applied by spraying or dipping, and can be baked in any well-designed industrial oven capable of schedules ranging from

one to two hours at temperatures from 250 to 300 deg. F. The oven shown in the illustration is well adapted to handling this type of finish. Accurate heat control and an ample supply of fresh air at the proper temperature are essential. Since a part of the curing process of such a finish is accomplished by oxidation, the element of fresh air in the oven is more important than is generally realized. The maximum hardness of the finish cannot be obtained even by increasing the oven temperature unless there is ample oxygen present to permit complete oxidation of the film. A case recently arose where a user of the high-bake synthetic enamel was able to get the maximum hardness and toughness at a baking temperature 15 deg. lower than he had been using, simply by increasing his oven ventilation.

Although the high-bake synthetic finishes have been available a comparatively short time, they

have been adopted for use on a wide variety of products. Household ranges, refrigerators, hot water heaters, sink bases, kitchen cabinets, shower stalls and food mixers are a few articles which are now in quantity production with the new finish. Its merits are amply attested by the size and importance of the manufacturers who have adopted it, and by the rigorous service to which it is subjected on some of the products mentioned above.

Many manufacturers of metal products have learned during the late lean years to practice every available economy in an effort to operate at a profit. Rapid development in the field of industrial finishes during the last five years, resulting in the production of such materials as the new high-bake synthetics, offers alert manufacturers an additional opportunity to improve their product or to reduce their costs, or both, in the finishing department.

Sessions Arranged for Welding Society

(CONTINUED FROM PAGE 21)

Continuous Structures, by Inge Lyse, Fritz Engineering Laboratory, Lehigh University.

2:00 p. m. Presiding officer—C. A. Adams, director, American Bureau of Welding. Fundamental Research in Welding: Arc Welding with Pure Iron Welds, by Gilbert E. Doan, Lehigh University; Investigations of Residual Stresses, by R. E. Jamieson, McGill University; Low Temperature Tests of Welds, by Otto Henry, Brooklyn Polytechnic Institute; Creep Tests of Welds, by N. F. Ward, University of California.

October 2

9:45 a. m. Presiding officer—D. C. Wright, chairman, Chicago Section. Tests to Determine the Feasibility of Welding the Steel Frames of Buildings for Complete Continuity, by W. M. Wilson, University of Illinois; Welding All-Metal Radio Tubes, by M. L. Eckman, Thomson-Gibb Electric Welding Co.; A New General-Purpose Meter for Resistance Welding, by C. Stansbury, Cutler-Hammer, Inc.

2:00 p. m. Presiding officer—G. T. Horton, president, Chicago Bridge & Iron Works. Symposium

on Methods of Minimizing Distortion: Pressure Vessels, by J. T. Phillips, Foster Wheeler Co.; Repair Welding, by Geo. Hettrick, president, Anchor Welding Service, Inc.; Light Gage Steel, by J. H. Blaha, General Household Utilities Co. Machine Torch Cutting and Fabrication of Tool Equipment, by P. H. Danly, Danly Machine Specialties Co.

October 3

9:45 a. m. Presiding officer—Dr. W. M. Mitchell, Illinois Steel Co. Symposium on Low Alloy Steels for Welding Purposes: Development and Use of Low Alloy High Tensile Steels in Welded Construction, by A. E. Gibson, The Wellman Engineering Co.; Welding of Alloy Steels, by H. L. Miller, Republic Steel Co.; J. C. Holmberg, Struthers-Wells-Titusville Corp.; Corbin Chapman, Hedges-Walsh-Weidner Co.

2:00 p. m. Presiding officer—E. Vom Steeg, chairman, Meetings and Papers Committee. Welding of Alloy Steels, by J. C. Hodge, Babcock & Wilcox Co.; Effect of Generator Characteristics on the Weld, by J. H. Blankenbuehler, Westinghouse Electric & Mfg. Co.; Electrical Characteristics of the Welding Arc, by S. C. Osborne, Wilson Welder & Metals, Inc.; Resistance Welding of Copper Alloys, by I. T. Hook, American Brass Co.

* *Industrial Finishing*, May, 1935.

Enter the Copper House



THE first copper house to be built in this country has been completed by Copper Houses, Inc., at Bethesda, a Washington suburb. The outside walls, the roof and roofing accessories are all of copper. In addition, the plumbing lines, heating lines, screens, radiation and hardware on the inside of the house are also of copper or copper alloys.

The framework is of structural steel. The floor joists between the basement and the first floor, and between the first and second floors are likewise of steel, and the bearing of the house is entirely on the outside steel framework. Hence the partitions between the rooms carry no load and the arrangement

of rooms can easily be changed, just as in modern office buildings.

The outside walls consist of copper plates backed by a half-inch thickness of composition board, which adds stability to the sheets and minimizes any metallic noise when the plates are struck.

The plates are fastened to the structural steel by means of a special bronze holding strip upon which patents are pending. This method of attachment not only holds the copper sheets tightly to-

gether, but also provides for both horizontal and vertical expansion, at the same time furnishing a weather-proof and insect-proof connection.

The roof is covered with regular 16-oz. sheet copper over a wood deck, and heat and cold insulation is provided for by a 4-in. thickness of spun glass.

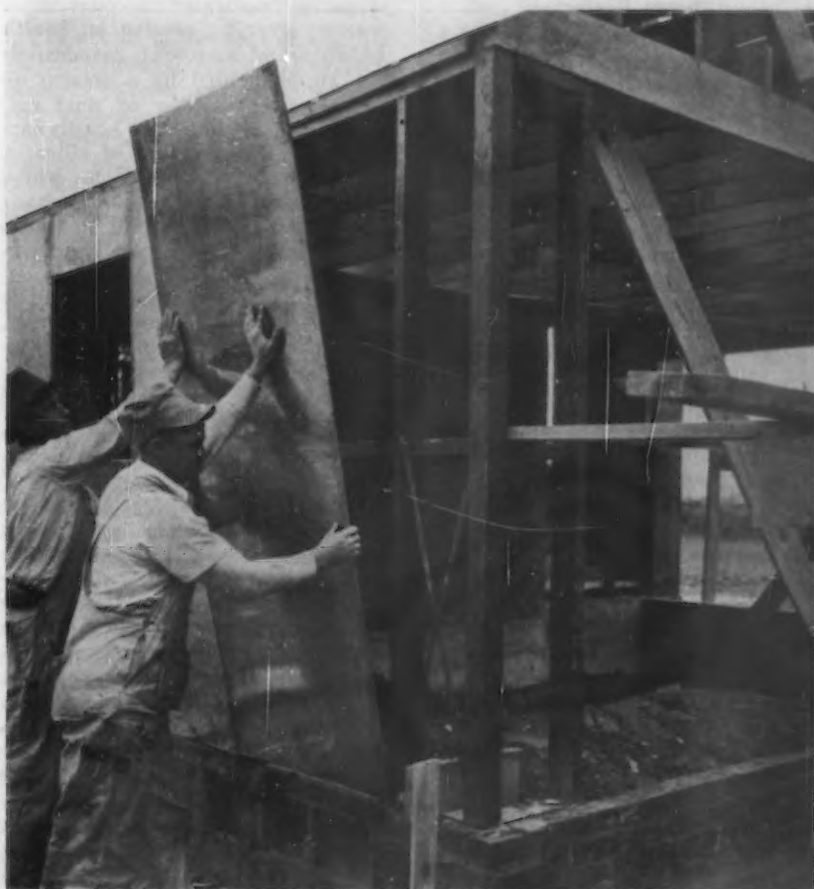
The inside walls are plastered on metal lath and the space between the walls is filled with spun glass. Hardwood floors are laid on the fireproof sub-floor, which is supported by steel floor joists.

While the thickness of the outside walls is only about 6 in., the insulation is said to be equivalent to approximately 8 ft. of solid masonry.

The house has a complete air-conditioning system to provide it with warm, moist air in the winter and dry, cool air in the summer. The air is mechanically filtered and cleaned throughout the year. Heating is by copper radiators concealed in the walls.

The Bethesda house is of the English farmhouse type. Copper Houses, Inc., which is a subsidiary of the Kennecott Copper Corp., plans to adhere to the more accepted architectural styles, combining the savings of prefabricated construction with the pleasing appearance of established designs of home construction. A cost comparison of copper houses with the same designs in brick or wood is said to be favorable to copper. Accepted designs, it is stated, will range from about \$4,500 upward. The Bethesda house represents one of the larger structures.

The address of Copper Houses, Inc., in Washington is the Rust Building, Fifteenth and K Streets N. W. Its main office is at 10 East Fortieth Street, New York.



All exterior walls are made of copper sheets weighing about 3 lb. to the sq. ft.

they are actually cheaper to use than many of the older synthetic finishes.

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* *Industrial Finishing*, May, 1935.

Enter the Copper House

THE first copper house to be built in this country has been completed by Copper Houses, Inc., at Bethesda, a Washington suburb. The outside walls, the roof and roofing accessories are all of copper. In addition, the plumbing lines, heating lines, screens, radiation and hardware on the inside of the house are also of copper or copper alloys.

The framework is of structural steel. The floor joists between the basement and the first floor, and between the first and second floors are likewise of steel, and the bearing of the house is entirely on the outside steel framework. Hence the partitions between the rooms carry no load and the arrangement

of rooms can easily be changed, just as in modern office buildings.

The outside walls consist of copper plates backed by a half-inch thickness of composition board, which adds stability to the sheets and minimizes any metallic noise when the plates are struck.

The plates are fastened to the structural steel by means of a special bronze holding strip upon which patents are pending. This method of attachment not only holds the copper sheets tightly to-

gether, but also provides for both horizontal and vertical expansion, at the same time furnishing a weather-proof and insect-proof connection.

The roof is covered with regular 16-oz. sheet copper over a wood deck, and heat and cold insulation is provided for by a 4-in. thickness of spun glass.

The inside walls are plastered on metal lath and the space between the walls is filled with spun glass. Hardwood floors are laid on the fireproof sub-floor, which is supported by steel floor joists.

While the thickness of the outside walls is only about 6 in., the insulation is said to be equivalent to approximately 8 ft. of solid masonry.

The house has a complete air-conditioning system to provide it with warm, moist air in the winter and dry, cool air in the summer. The air is mechanically filtered and cleaned throughout the year. Heating is by copper radiators concealed in the walls.

The Bethesda house is of the English farmhouse type. Copper Houses, Inc., which is a subsidiary of the Kennecott Copper Corp., plans to adhere to the more accepted architectural styles, combining the savings of prefabricated construction with the pleasing appearance of established designs of home construction. A cost comparison of copper houses with the same designs in brick or wood is said to be favorable to copper. Accepted designs, it is stated, will range from about \$4,500 upward. The Bethesda house represents one of the larger structures.

The address of Copper Houses, Inc., in Washington is the Rust Building, Fifteenth and K Streets N. W. Its main office is at 10 East Fortieth Street, New York.



All exterior walls are made of copper sheets weighing about 3 lb. to the sq. ft.



Foundrymen Deliberate

FOUNDRYMEN turned out in record-breaking numbers last week at the annual convention of the American Foundrymen's Association at Toronto, Canada. With a wide variety of timely and practical technical papers as the primary attraction and the Canadian National Exposition as secondary attraction, over 700 members of the association and 130 women guests registered for the five-day convention. This attendance compares with a total registration of 500 at the last non-exhibition meeting at Detroit in 1932.

The program, developed by the various division committees, presented topics of most vital interest on research, management and production. Papers on new developments in cast iron and steel were presented in profusion, and other sessions of general interest included foundry materials handling, refractories, and sand research. In addition, those interested in the more practical shop operation phases of the foundry were afforded two shop courses arranged for their special interest. The two courses, each consisting of three sessions, were devoted to foundry sand control and iron foundry melting. The sand shop course covered new sand qualities, natural sand uses and applications of synthetic sands.

Officers Reelected

At the Thursday business session of the association it was announced that Dan M. Avey had been reelected to serve a second year as president of the association. Mr. Avey has long been active in foundry affairs and since 1925 has been editor of *Foundry*. B. H. Johnson was reelected to serve a second term as vice-president. Mr. Johnson is assistant to the president of the R. D. Wood Co., centrifugal cast iron pipe manufacturer in Philadelphia. Five new directors elected to serve three-year terms are as follows: L. S. Perego, president of the Sivyer Steel Casting Co., Milwaukee; W. J. Cluff, president of Frederic B. Stevens, Inc., Detroit; C. E. Davis, vice-president of Alloys Specialty Co., Coraopolis, Pa.; F. A. Sherman, general manager of Dominion Foundries & Steel, Ltd., Brantford, Ontario; and H. S. Washburn, president and treasurer of Plainville Casting Co., Plainville, Conn.

At the association's annual dinner, Thursday evening, the board of directors formally presented the John A. Penton Gold Medal to Major Lawrence Lee Anthes in recognition of distinguished service to the foundry industry of America.

Except for the many important technical papers presented, the out-

standing feature of the convention was an evening session on health hazards and employer responsibility, supplemented by a session on engineering features of dust collection. This subject of health hazards, particularly that of silicosis, has long been a problem which foundrymen have treated in a half-hysterical, half-fearful manner. And this attitude is partly understandable, inasmuch as many operators have been faced with lists of civil suits and, more recently, with State legislation and insurance demands so severe as to threaten the very existence of many foundries.

Therefore, the session on silicosis was not only interesting, but of great value to operators, as it brought the problem out in the open, introduced foundrymen to the exact nature of the ailment and disclosed a number of practices which would tend to eliminate the disease almost entirely in the normal foundry. Two foremost authorities on health hazards were present to lead the discussion and answer the multitude of questions advanced by foundrymen in attendance. These two men were W. J. McConnell, director of the industrial health section of the Metropolitan Life Insurance Co., and Donald L. Cummings, assistant director of Saranac Laboratories.



Silicosis Hazard

Silicosis Danger Not Serious

The actual importance of silicosis as an industrial problem has been greatly overemphasized for several reasons, chief among which has been the reluctance of administration officers to investigate and reveal the existing fact in their operations. Thus the mantle of secrecy which has shrouded existing conditions wherever many dust hazards are involved has served to exaggerate their significance.

The entire session on silicosis could be roughly summarized by stating that there is a real silicosis hazard in many foundries, and foundrymen are morally obligated and, in many cases, legally bound to take steps to minimize this hazard. If certain practices are followed, the average foundryman need not fear that his workers will contract the ailment in a degree leading to disability. Some managements apparently regard the silicosis question as purely a legal matter and often rely on lawyers for determination of policy. It was very forcibly brought out at the meeting, however, that *silicosis can best be combated by eliminating the cause in much the same manner that industrial accidents have been greatly reduced during the past decade through intelligently administered safety first rules and practices.*

But, first, it is interesting to examine the exact nature of the disease. In the normal individual, the reaction to inhaled crystalline silica is characterized by the development of a peculiar type of fibrosis or scar which appears in those areas where silica is deposited within the pulmonary structures. The inhaled silica particles at first are transported to the drainage system or lymphatics, and the lymph nodes at the root of the lungs assume a characteristic fibrosis. However, this drainage system, on continued exposure to the dust, may clog and the dust is consequently deposited in selected areas throughout the lung substance itself. Small, discrete and uniformly distributed fibrous nodules from 2 to 6 mm. in diameter may eventually develop in large numbers within the lung, presenting in this stage the characteristic picture of advanced silicosis. *But this silicosis, even if advanced, is rarely dangerous or disabling unless it is complicated with tuberculosis.*

Obviously, a lung which has been injured by a pulmonary infection such as tuberculosis is far less competent to deal with a dangerous dust such as silica than is the normal lung. Thus it should be realized that silicosis assumes a serious position as an occupational hazard because of its effect on pul-

monary infections predominately tuberculous in character.

Preventive Measures

Though a foundry must always be considered a dusty industry, the nature of its operations are such as to induce for the most part only a modified silicosis. The workmen who are disabled by an occupational fibrosis contracted in the foundry are generally those who also exhibit evidence of a concurrent pulmonary infection or other injury. A normal man may work for many years in air containing pure crystalline silica without impairing his health, providing the concentration does not exceed 5,000,000 particle per cu. ft. of air, as determined by the standard testing methods used in the United States. Concentrations of 100,000,000 or more pure silica particles per cu. ft. of air appear to be extremely hazardous. It should be noted that these particles apparently are dangerous only when they are 0.5 to 10 microns in diameter, with 0.5 to 3 microns the most dangerous range. Of course, these figures apply only to individuals without pulmonary abnormalities. The presence of pulmonary infections greatly increases normal susceptibility to dust diseases.

Even though the foundryman
(CONTINUED ON PAGE 60)

Capital Goods

INDIVIDUAL gains were contributed to THE IRON AGE index of capital goods activity by three of its components last week, but losses experienced elsewhere more than offset these, and as a net result, the index receded. Excluding the automobile component, the combined index increased over the preceding week by 0.2 points, but, without this omission, the combined loss amounted to 0.8 points. Gains were made by steel, lumber shipments, and Pittsburgh district activity, while construction contracts awarded lost half a point. The combined decrease, however, was by and large due to suspended activity in the automotive industry occasioned by preparation for new models.

The estimated index number for last week of 56.9 compares with a

The Iron Age Weekly Index Numbers of Capital Goods Activity

(1925-'27 = 100)

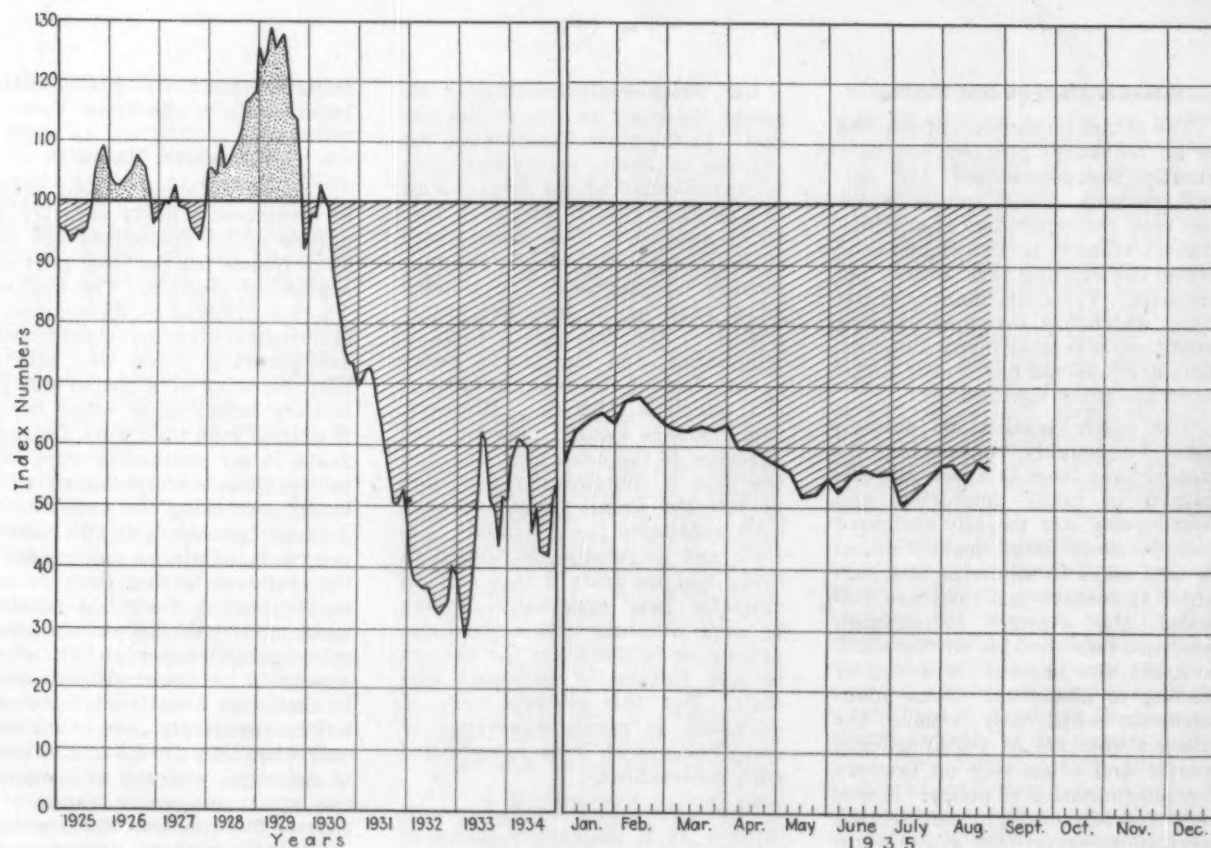
Last week (est.)	56.9
Preceding week (rev.)	57.7
Same week last month	57.7
Same week 1934	46.9
Same week 1933	58.6
Same week 1932	32.5
Same week 1931	57.2
Same week 1930	85.3
Same week 1929	121.2

figure of 46.9 for a year ago and 58.6 for two years ago, indicating a gain and a loss of 21 per cent

and 3 per cent respectively. But an even more favorable comparison inheres in THE IRON AGE cumulative index, which, since the end of June, 1935, has substantially increased the margin by which it is leading 1934 in indicated total production. On the basis of the average rate prevailing from 1925 to 1927, 1935 now exceeds 1934 by an amount equivalent to 1.1 weeks, whereas two months ago the margin of difference amounted to less than half a week. With respect to 1933, sufficient production has already accumulated in 1935 to have bettered the former year's mark for a period 10 weeks longer in duration.

Public Debt at New High Level

Realization of the paltry additional revenues to be yielded by the



(1925-27 Average = 100)

The Iron Age Index of Capital Goods Activity. The years 1925 to 1934 are plotted by months, the current year by weeks.

Index Recedes

Administration share-the-wealth taxes again directs public attention to the fact that the Federal Government has operated with an annual deficit in each of the past five years. During this period the public debt has increased from \$16,185,000,000 at the end of the 1930 fiscal year to more than \$29,000,000,000 at the present time. The budget for the current fiscal year indicates another deficit of \$3,900,000,000, so that the Federal debt will stand at an all-time high level of nearly \$33,000,000,000 on June 30, 1936. Not only will all of the gains resulting from a ten billion dollar debt reduction during the prosperous post-war decade have been wiped out, but the public debt will be between six and seven billion dollars larger than at its immediate post-war peak of \$26,594,000,000 on Aug. 31, 1919.

The amount of the public debt, however, is only one factor in appraising the soundness of public credit. A more significant test is the relation between Government receipts and expenditures, which measures the extent to which the

Government must resort to borrowing to meet its needs, and the length of time during which the budget fails to balance. These measures of severity and duration furnish a real indication of the seriousness of a deficit. From this point of view the Government financial situation at the present time is far from encouraging.

The chart at the bottom of the page provides a picture of the fiscal record of the Federal Government over the past century. Ordinary receipts are plotted for each year as a percentage of the expenditures in the same year. Thus the black areas above the 100 per cent base line show annual surpluses, and those below the line, annual deficits, on a relative basis, i.e., in relation to expenditures in the same year.

The present deficit has been exceeded both in severity and duration only once during the past century. For eight years from 1858 to 1865, which included the heavy expenditures of the Civil War, Government receipts failed by a considerable margin to equal expenditures. The political and eco-

nomie effects of this experience are familiar to every high school student. In spite of the fact that for nearly three decades after the war continuous annual surpluses were being applied to a steady reduction of the public debt, "greenbackism" and bi-metallism plagued the nation until the end of the century.

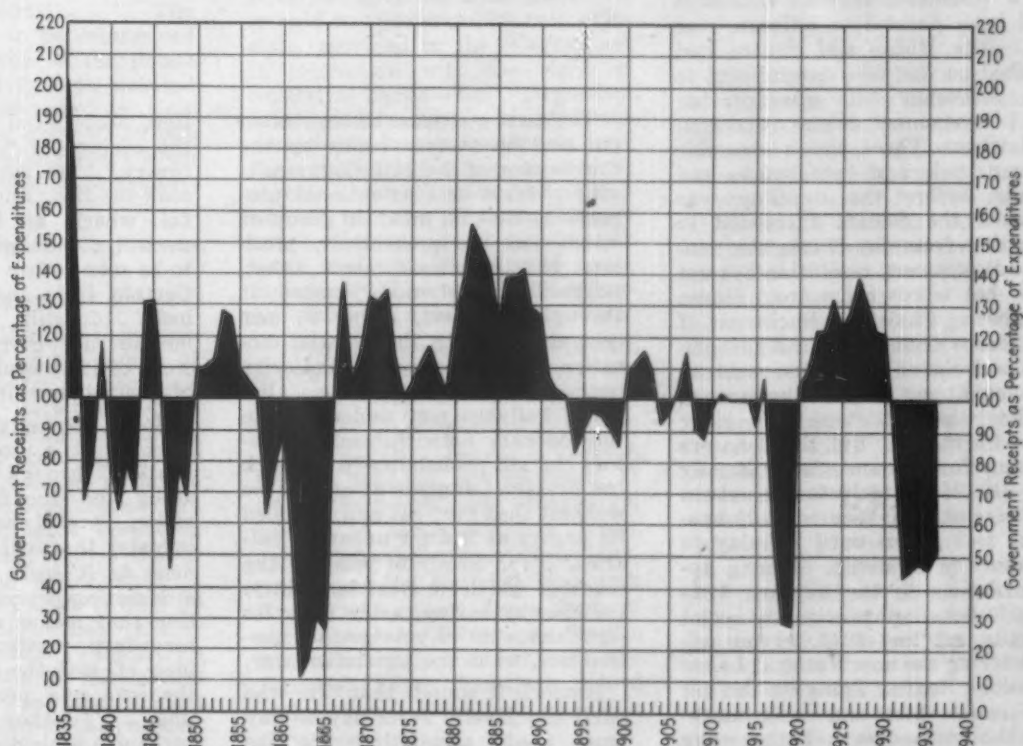
It is interesting to note that during the long and severe depression of the 70's the Government never incurred a deficit, while the six annual deficits during the depression of the 90's were of minor severity, with each year's receipts varying between 83 per cent and 96 per cent of expenditures in the same year.

World War expenditures resulted in heavy deficits for three years, but the debt created during this period was rapidly reduced during the ensuing decade. The present deficit, with revenues only half as large as expenditures, promises to be of longer duration and greater severity than any that has ever before occurred during the past century except in time of war.

FEDERAL FISCAL RECORD DURING THE PAST CENTURY

Ordinary Receipts of the Federal Government Computed as Percentages of Ordinary Expenditures.

Source: Annual Reports of the Secretary of the Treasury.





THIS WEEK IN WASHINGTON

Congress adjourns

. Now business will

BY L. W. MOFFETT
*Resident Washington Editor
The Iron Age*

have a chance to

recover!

TRUE to its circus-like characteristics, the plan of Congress to adjourn at midnight last Saturday was blocked by some monkey shines. All because of the extreme zest to do more for the farmer, not to say because of a desire for the farm vote. The last measure, the third deficiency bill, was on the eve of enactment shortly before midnight at which time by a resolution of both houses it had been decided to adjourn *sine die*. The House and Senate had clashed on the rider amendment to the deficiency bill guaranteeing 12c. Government loans on cotton and wheat. There was a scramble among leaders of both houses and finally before the deadline was reached the Senate succeeded in recalling from the House the Senate adjournment resolution but not until hot words came from House members. Chairman Buchanan of the House Committee on Appropriations declared it was too much to swallow at one gulp and he favored letting the bill with its rider amendment die. But the Senators driving for the amendment finally saw the House reluctantly return the resolution. Whereat adjournment was taken until Monday to resume the scramble. Among appropriations in the bill are \$76,000,000 for administering the social security act and \$245,000 for administering the new National Labor Relations Board. Tying up the bill threatened these and other measures though leaders said other ways probably would be found to finance them, if necessary.

The mess and mass of legislation put on the statute books by the first session of the 74th Congress is of such vast and potential proportions that no mind or group of minds can comprehend it, much less the mindless minds, that, politically construed, jammed it through Congress, about 90 per cent according to Presidential dictation. . . . A more servile majority would be difficult to imagine. . . . Political ballyhoo now under way to the contrary notwithstanding, history in all probability will mark the present Congress as one of the weakest that ever sat and twiddled its fingers as it drew unearned salaries. . . . Ready to jump at the crack of the New Deal lash, little knowing or caring, aside from its significance as to vote-getting possibilities, what the legislation was.

Homeric it sounds that "He who hurls the javelin from day to day must needs some time hit the mark." . . . So it is in view of the enormous bulk of the legisla-

tion, some good may come from the concept of "reform before recovery," "The more abundant life," soak-the-rich, and taking a spiteful whack at bigness in business. . . . It will, however, have to be seen before it is believed. . . . Certain it is that the legislation looks to still further Federal bureaucracy even to control over crops of Irish spuds, to say nothing of control over industry.

Social security legislation has back of it a good purpose, but, hustled through without ample study and due for inevitable revision, it will put a guard over industry that will mean added burdens as it seeks to emerge from a devastating depression. . . . Taxation that makes revenue hardly a secondary matter, based on the idea of soak-the-rich, will add to the load and provide more heckling. . . . Labor troubles and disturbances a-plenty lie ahead as agitation from organized labor will develop from such legislation as the

Wagner labor disputes and Guffey coal acts with their ponderous boards, commissions, etc., operating with headquarters in Washington. . . . Proper control of credit can be an aid to industry, but the broadened Federal power over credit under the new banking act brings concern lest it be administered improperly. . . . Some public utility lobbyists have revealed glaringly the need of regulation of the corporations they represent. . . . But to bring down the Federal ax of destruction on the many instead of the few is bad news for the investors. . . . The country is overwhelmingly and ardently against getting sucked into another war, but there are many who think the neutrality act with its arms embargo will come nearer to forcing the United States into trouble than preventing it. . . . The once-battered Uncle Shylock, now the beloved Uncle Sam, can best keep out of trouble by minding his own business and by being deaf, dumb and blind to cajolery or ranting originating in sources abroad.

Class Legislation Prevailed

In any case, the legislation is on the books. . . . Much of it is class legislation of the worst sort, some of it supported by politicians in Congress who wear diverse brands, Republican, Democrat, Progressive, Farm-Labor. . . . The principal reason the legislation got by is due to the apathy of the public at large, with perhaps many voters suffering from the dole-psychology. . . . Some of the legislation will unquestionably be plowed under by the Supreme Court. . . . The question remains to be determined whether the apathy of the public will be converted into an aroused body of voters prepared to plow under demagogues and put an end to the titanic spending spree when they go to the polls in November, 1936.

Highlights of legislation just enacted follow:

The Wagner Act

With the Presidential announcement last Friday of the names of the three members of the new National Labor Relations Board set up under the Wagner-Connery act, prediction is made freely that the board soon will be swamped with cases. Although supporters of the organized labor sponsored act have made easy claims that it will "bring peace in industry," a decidedly contrary view is held by industry generally which bitterly opposed the legislation. Industry's contention is based on the intense activities of organized labor leaders to unionize workers of the country. They are especially eager to force union recognition in two of the

major industries of the country, steel and automobiles. They are also trying to enforce greater demands in the textile industry, already largely unionized.

As soon as the board and its personnel are organized, and policy of procedure ready for operation, it is believed organized labor will be quick to bring cases in the steel and automobile, as well as other industries, before the board. Renewal of cases which went by the board with the Supreme Court NRA decision is said to be in prospect, together with new cases which promise to bring about a trek of industrial and labor representatives to the board in Washington and to its regional boards. It is believed also that the Steel Labor Relations Board and the Textile Labor Board, now attached to the mediation division of the Department of Labor, will be transferred to the new National Labor Relations Board to handle cases in those industries. Separate boards, under the jurisdiction of the National Labor Board, may also be established for other major industries, it is reported.

Much interest is being shown as to whether such a board will be established for the automobile industry to replace the abandoned Automobile Labor Board to which organized labor was so hostile. Proportional representation provided under the Automobile Labor Board was vigorously opposed by organized labor after the latter found itself strongly out-voted in the open shop automobile industry. It turned upon the ALB and stoutly held for the majority rule principle, provided in the Wagner act in connection with the right of collective bargaining. Organized labor clearly hopes to gain the ascendancy in membership in both these major industries, as well as others, and will make the utmost use of the new Wagner-Connery act to achieve its demands. As much was plainly indicated again last week at the meeting of organized labor in Atlantic City.

It hopes to make its drive swiftly before the act comes before the Supreme Court for the inevitable test as to its constitutionality.

Heading the board is Joseph Warren Madden, law professor at the University of Pittsburgh, named to serve for five years. John Michael Carmody, New York, member of the National Mediation Board, was chosen for a term of three years. Edwin S. Smith, Massachusetts, member of the National Labor Relations Board created under NRA, was named to serve one year.

Mr. Madden, formerly a member

of the Pennsylvania committee on planning and industry, has practiced law in Pennsylvania and in Illinois and has taught law at Ohio State University, the University of West Virginia, as well as at the University of Pittsburgh. He was a special assistant to the Attorney General in 1920 under the Harding administration.

Mr. Carmody was formerly chairman of the National Bituminous Coal Labor Board and at one time was chief engineer of the Civil Works Administration.

Mr. Smith formerly was Massachusetts commissioner of labor and industries and long has been active in labor and industrial relations. Last year he was appointed by President Roosevelt as an observer at the International Labor Organization Conference at Geneva.

Senator Wagner's vigorous efforts in putting the Wagner-Connery act on the statute books was only a part of his activities in connection with social legislation at the session of Congress which has just ended. He was active in connection with the social security act and the railroad pension act among other measures. But he has announced a further program for the next session, and, because of the Senator's close relations to the White House, his program is given unusual attention. He said last Friday that he proposes the enactment of a Federal law regulating minimum wages and maximum hours for work, ratification of the child labor amendment to the Constitution and the maintenance of public works enterprises.

The Guffey Coal Act

The Guffey coal bill was enacted by Congress after several narrow squeaks and after some of the bitterest debates of the entire session. It is perhaps true that few if any who voted for the measure think it will stand the test of constitutionality when it reaches the Supreme Court for which it is definitely headed. The President, however, succeeded in pushing the legislation through in strict accordance with his letter to Representative Hill of the Ways and Means Committee in which the President said, "I hope your committee will not permit doubts as to constitutionality, however reasonable, to block the suggested legislation." It was a perfect appeal to a pliant majority, unequalled in its disregard of the constitutionality of legislation before it, and unequalled in its political play for votes. And there can be no doubt that, under the lash of the United Mine Workers of America, many voted for the bill against their own convictions, fearing that to do

otherwise would turn organized labor votes against them. There was also, of course, a bludgeoning of votes for the bill under the United Mine Workers threat that unless the bill was passed it would go on strike Sept. 16. Much ranting about the "chaos" that would result if the bill was passed was based on this threat of riot rule. The power of intimidation obviously was a strong factor with such a weak-kneed majority. Opponents refused to be bullied by the threat and vigorously assailed such tactics to force legislation. They also took in account the effect the legislation will have on consumers in the way of increased coal prices, but the consumers were not organized and therefore got nowhere.

At that the opposition was so strong that it is reported the bill was passed in exchange for votes for the potato control bill. Members from potato districts, regardless of party, however, stood ready to swap tubers for coal and this, together with Presidential and organized labor support, put the Guffey bill through.

The bill, however, was passed only after the adoption of some amendments which changes it in some essential respects from its original form. The proposed \$300,000,000 for the purchase by the Government of so-called marginal coal lands was stricken out. The provision for suspension of the anti-trust laws for producers complying with the code which is to be established was knocked out.

For steel interests owning captive coal mines, perhaps the most important amendment was one which struck out the provision that a nationally established union (United Mine Workers) must be recognized for purposes of collective bargaining. In its stead was written a provision that the daily and weekly hours agreed upon in contracts between producers of more than two-thirds of the tonnage production in a district or districts in a contracting group during the preceding year shall be negotiated by more than one-half of mine workers with producers who are code members in such a district or districts. The same principle is to be applied with respect to collective bargaining in connection with wage scales for the various classifications of labor. While apparently the United Mine Workers might arrange groups so that it has the majority in most cases, it is contended it does not have the majority in some districts, such as some in Illinois where the radical Progressive Miners' Union dominates, and it is also contended that in steel company owned captive mines the so-called company

union might easily predominate. This, however, it is claimed, will depend on whether these mines are tied up with groups where organized labor has the majority power.

Steel companies protested against inclusion of their captive mines in the legislation on the ground that captive coal mines do not sell commercial coal and therefore have nothing to do with the declared purpose of the bill to regulate competitive conditions.

The act provides for a bituminous coal commission which will supervise price fixing, guarantee miners the right of collective bargaining and set up a labor board to handle disputes. As a means of enforcing compliance with the so-called code it carries a 15 per cent sales tax on producers with a 90 per cent drawback for those who adhere to the code.

Differences within the United Mine Workers were reflected in the course of the legislation. The International Association of Machinists, a craft union, attempted unsuccessfully to have Congress incorporate an amendment which would permit that union to represent the machinists in collective bargaining. The United Mine Workers, an industrial union, frustrated the attempt.

The Tax Act

The new share-the-wealth tax act, political red herring that it is, at least has the merit of omitting inheritance taxes which constituted the major point of the President's program. Even the majority in Congress realized its dangerous and confiscatory nature, together with its futility as a revenue feature, and could not swallow it. As it is, the act is estimated to raise some \$250,000,000, obviously a bagatelle in these days of a wild spending spree. As it is, also, the act lays its greatest burden on big business which the Administration affects to dislike so cordially. It is expected that of the new revenue more than \$100,000,000 will come from increased corporation taxes. The much condemned principle of graduated taxes on corporate income was retained. Also the act provides a large capital stock tax, an excess profits tax, an intercorporate dividend tax and greater surtaxes on personal incomes in excess of \$50,000, together with increased estate and gift taxes.

Replacing the flat rate of 13 1/4 per cent on corporation taxes are the following graduated taxes: 12 1/2 per cent on income up to \$2,000; 13 per cent between \$2,000 and \$15,000; 14 per cent between \$15,000 and \$40,000, and 15 per cent on more than \$40,000.

To become effective on taxable years ending after June 30, 1936, these taxes are estimated to raise \$35,000,000.

The tax on declared value of capital stock was increased from \$1 to \$1.40 per \$1,000, corporations being permitted to declare the value of their stock. It is estimated that \$40,000,000 will be yielded from the increase in this tax.

Under the excess profits provision, income of 10 per cent on stock value is exempt with a tax of 6 per cent for the 10 to 15 per cent bracket and 12 per cent in the bracket over 15 per cent. Estimated to raise only \$10,000,000 in revenue, the purpose of these taxes is considered to be to prevent low capital value declarations. Ten per cent of intercorporate dividends is included in the corporate income subject to the graduate taxes and is equivalent to a tax of 1 1/2 per cent.

The Social Security Act

Starting of the gigantic Social Security program was made last Friday when the President named the three-man board which will administer the act. Heading the board is former Governor John G. Winant of New Hampshire, who is to serve until Aug. 13, 1941. Arthur J. Altmeyer of Madison, who was second assistant labor secretary, will serve until Aug. 13, 1939, while Vincent Morgan Miles, Fort Smith, Ark., lawyer and former member of the Democratic national committee, will serve until Aug. 13, 1937. This board will ultimately grow into one of the largest Government organizations of all time. It will have a tremendous voice in industry. For it will, beginning about 1937, have to keep records on practically all employers in the United States and some 25,000,000 employees, who will have to start that year turning in payroll taxes. From these taxes will be financed the joint Federal-State unemployment insurance and the Federal old-age annuity system. The tremendous undertaking involved, as the Government starts its excursion into the plan, is indicated by the fact that annuity records will have to be kept for each worker. In order to determine the pension to which he is entitled at the age of 65, it will be necessary to record the amount of wages. It will be 1942, however, before pensions start. Details of the act have been outlined heretofore in THE IRON AGE.

Governor Winant is a student of labor problems and headed the committee which made a report on a labor controversy in the textile industry at the request of the Presi-

dent. The report was considered to be a fair one and contained methods for settling the controversy that met general favor, though it was criticized by both organized textile workers and manufacturers. In the World War Governor Winant was an officer in the Aero Squadron. Mr. Miles was formerly a regional adviser in the PWA and was an infantry captain in the World War. Mr. Altmyer was formerly chief of the NRA compliance division.

The New Banking Act

Giving the Government broader power over national credit and banking, the 1935 banking act gives authority to the Federal Reserve Board to control credit through practical dictation of open market operations of regional banks. The power of the Government to increase or decrease business credit is seen in these operations, together with control of rediscount rates, freer lending powers and power to increase reserve requirements. The bank deposit insurance program under which protection is now being received by some 15,000 banks, is made permanent and all deposits are insured up to \$5,000, out of assessments of one-twelfth of one per cent made on deposits of insured banks. Authority is given to the Federal Deposit Insurance Corporation, insurer of the banks, to control operations of its member banks, including rates of interest to be paid to depositors.

The Federal Reserve Board is especially affected by broad changes made in Federal banking agencies and is to be superseded Feb. 1, 1936, by a board known as the Board of Governors of the Federal Reserve System, the number of members to be seven instead of eight as at present. The Secretary of the Treasury and the Comptroller of Currency will be removed as members and each of the 12 regional Federal Reserve banks will have a president to replace the present governor and reserve agent. President will be made directly responsible to the board in Washington. Members of the board will be selected to serve 14 years at a salary of \$15,000 instead of \$12,000 as at present.

NRA Starts Another Survey; Still More to Come

Another epidemic of Government surveys is about to break out. And by the irrepressible NRA. Reduced to the lowly status of a fact-finding body by the Supreme Court wallop in the Schechter case, it was reorganized but has managed to keep a surprisingly large payroll, about which some members of Congress have been yapping.

Charges have been made that many on the payroll have been boondoggling, if that much, while others have been engaged on industrial surveys covering a wide scope. The new survey, ordered last week, will cover field work by regional and State directors in distributing trades and national industries, including fabricated metal products. It was announced that the purpose is to determine changes in labor and trade practice standards that have resulted since the termination of the codes. The survey is to be confined to metropolitan areas in which NRA representatives are located and calls for a broad scope of information, such as average hourly earnings of employees receiving less than code minimums, the number of hours worked each week, etc.

NRA pointed out that the survey "which is merely for fact-finding purposes, is in no sense an investigation of individual concerns, and that the data assembled will be held as confidential information by the Government."

In view of the mania for "surveys," "studies," etc., it probably was not necessary for NRA to do so, but it announced that surveys in additional industries will be started in the near future. It did not say what would be done with the surveys when they are completed.

Entire House to Be Reelected Next Year

ATTENTION has been called to an obvious misstatement made in THE IRON AGE of Aug. 22, page 39, that next November "about one-third membership of each branch of Congress will be elected." It was intended to read that about one-third of the Senate and the full membership of the House will be reelected at that time.

L. J. Martin Heads NRA

AURENCE J. MARTIN of Virginia was named acting administrator of the National Recovery Administration in an executive order by President Roosevelt last Saturday. He succeeds James L. O'Neill, resigned. Mr. Martin has been associated with NRA since Aug. 14, 1933, and on July 3 of this year was made executive officer. When he came to NRA he was special assistant to the Deputy Administrator of Division 2 (equipment), and subsequently served as

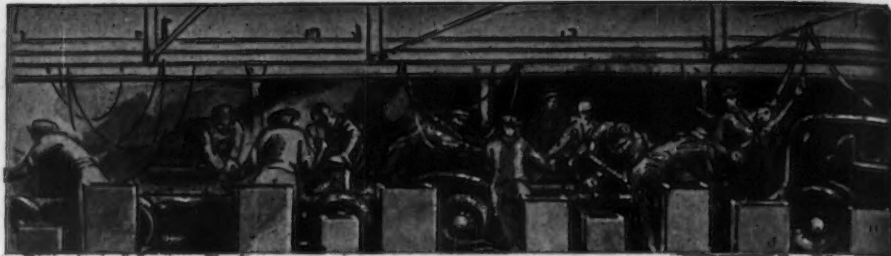
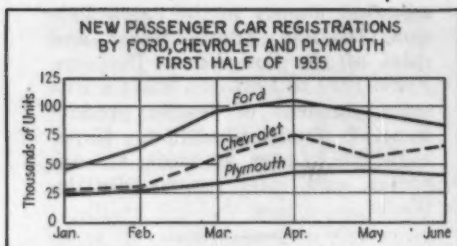
assistant deputy in the same division, Division Administrator and chief of the Compliance Division. From 1927 to 1932 Mr. Martin was superintendent of textile production of Tubize-Chatillon, Hopewell, Va. Later he was an exporter and importer in Seattle, Wash.

Walsh Bill is Not Passed

ONE of the President's must bills failed to make the grade. It was the Walsh bill requiring contractors and suppliers in connection with Government contracts to maintain code hours and wages. Pressure was brought to compel the House Committee on Judiciary to reconsider its vote of 13 to 7 by which it pigeon-holed the measure until next session. But the bill did not get out of committee. A so-called substitute bill was laid before the committee but carried only minor amendments. Chairman Summers of the House committee declared the bill was so complicated in its legal aspects that it required further study and for this reason it was voted down by the committee. Organized labor had strongly urged its passage. Industrialists generally opposed it vigorously as being impossible of successful administration and also charged that it was of doubtful legality.

Tin Plate Scrap Embargo Bill Fails

EFFORTS of Representative Faddis of Pennsylvania to bring up his bill to prohibit exports of tin plate scrap except upon certification by the President were defeated Saturday night in the House on the objection of Representative Taber of New York. The bill passed the Senate by a viva voce vote last Thursday when it was offered by Senator Barbour of New Jersey. Included in recommendations made some months ago by a subcommittee of the House Committee on Foreign Affairs was one that tin plate scrap exports be barred except through Presidential certificates. A like bill had passed at the previous session of Congress but was vetoed by the President. The President gave as his reason for his veto the fact that the subcommittee was making an investigation regarding strategic metals and that nothing should be done until the committee had made its report.



THIS WEEK ON THE AS

August Car Output Should Top 200,000

DETROIT, Aug. 27.
SIXTY some eventful days now separate the motor industry from the formal launching of its next year's sales campaign, which, as usual, begins with the New York automobile show. The interval that remains before the starting gun is fired for the 1936 race will see the usual maneuvering for favorable positions and last-minute grooming of entries. As not infrequently happens, there will be some eleventh hour changes when contestants discover what their competitors have to offer. Some already have been reported. In the past such changes have been responsible for many of the delays in new model introductions. But there is nothing on the horizon now to indicate that any delays are in the offing. So far as can be determined, new model programs are all well along.

One and possibly two announcements are scheduled for September. Another for the second week in October. But the majority of new car announcements will cluster about the week-end preceding the New York show, starting Nov. 2. Because of prospective shortages here and there in dealer stocks some factories are thinking of making piece-meal introductions as sold-out territories are supplied.

For many plants the 1935 race is now over. Nine in the Detroit area have turned their backs on 1935 production programs and with increasing tempo are centering all activity on the preparatory work for the new lines. Buick, Packard and Cadillac already are turning out new models. Bodies for another important producer are coming off the assembly line. Pontiac and Olds should be under way early in September.

Changes Will Feature Style Element

Apparently model changes this

year will feature the style element. Chassis and motor changes are said to be minor. The front ends and fenders, more than any other part of the car, it is said, will show the handiwork of designers of 1936 cars. The trend is toward the torpedo-shaped, pointed in the rear type of fender with creases. There is the usual pre-announcement talk of a mystery car and the possibility of one of the independents scoring a hit with an exceptionally good-looking line. At any rate, eye appeal seems to be the key note for next year and the public may look forward to dressy new models when the curtain is pulled aside for inspection of the 1936 offering of the motor industry.

Aluminum pistons are expected to make an important gain in the percentage tables for next year according to information now available to engineers. While all manufacturers are not completely settled on their 1936 plans, it is possible that not over two makes of cars will have iron pistons for 1936. One of the main reasons for the accelerated swing toward aluminum is that the greater overall length, plus the demand for more passenger space within the streamline type of car, has materially contributed toward weight. During the past year car weights have gone up in many instances as much as 300 lbs. and for 1936 this tendency is likely to continue. In order to maintain the same or better performance it has been necessary to secure a higher output from the engine, which has led to increased use of aluminum pistons and added to the interest in aluminum cylinder heads, which permit higher compressions and consequently greater horsepower from the same piston displacement. The net result is that, although weights have increased, the power-weight ratio for 1936 as compared

with 1935 will not have changed materially.

August Sales Feel Seasonal Influence

While August retail sales have been quite satisfactory, they are beginning to show more marked seasonal influence. Early reports indicate a volume for the month of around 275,000 cars and trucks or some 11 per cent under the July deliveries of roughly 310,000 units. This figure represents actual deliveries by dealers but registrations undoubtedly will run well above this figure, since many of the vehicles sold in June were not registered until July because of the reductions which went into effect in title fees in 18 States last month. Many of these States allow half-year rates from July 1; others give only a 25 per cent reduction, but the incentive to hold over registrations for the lower rate is sufficient to account for a good part of the discrepancy between actual sales and registrations in July.

Contrary to expectations, new car stocks increased slightly in July. The production pace did not slacken as fast as sales. A number of plants were rushing to clean up on their 1935 production so as to get under way on new model preparation and thus turned out cars at a faster clip than dealers sold them. It is obviously more economical to maintain operations at a certain level and then cut off sharply than to string along gradually to the vanishing point. That is why there was a nominal increase in stocks, which at the end of July were estimated at just under 325,000 units for passenger cars, or a little over five weeks' supply.

Despite the various plant closings, the August output should run better than 200,000 cars and trucks, being sustained largely by



THE ASSEMBLY LINE

the heavy Chevrolet production, which is expected to account for more than 40 per cent of the month's total. Ford also has maintained a good-sized output since resuming on Aug. 12. It is not probable that the balance of the industry will be far enough along on the 1936 programs to offset the drop next month when these two giants of the industry are expected to curtail sharply if not suspend operations for a time for the changeover. Hence September undoubtedly will mark the low point in this year's motor vehicle production, although the volume is not expected to fall to last year's low of 80,162 units in November, a comparable month in the change-over period.

Reflecting the resumption of Ford Motor and Briggs Mfg. Co., as well as the substantial forces retained by those plants now engaged in changing to new model production, the Board of Commerce index of Detroit industrial employment advanced to 70.2 as of Aug. 15 from 66.6 at the end of July, the low point this year.

Chrysler Gets Wills-St. Clair Plant

Expansion seems to be the order of the day in the motor industry, at least with the volume producers. Chrysler Corp. has just acquired the Wills-St. Clair plant at Marysville, Mich., with its 150 acres of land and 150,000 sq. ft. of floor space. Chrysler is said to have paid around a quarter of a million dollars for this plant, which originally cost \$2,000,000. It was built in 1920 and closed three years later when the Wills-St. Clair car was discontinued. C. Harold Wills, founder of the company, for some time has been associated with Chrysler in an engineering capacity. The company has not disclosed what operations would be established in the newly acquired plant.

The Delco-Remy division of General Motors announces plans for establishment of a manufacturing plant in Bloomfield, N. J., to handle increased demand for Delco

BY BURNHAM FINNEY
Detroit Editor, The Iron Age

batteries, having acquired the eight-acre site and modern factory building formerly used by the La-France Republic Corp., truck manufacturer. Rehabilitation and equipment work will start promptly and battery production begin there in November. Capacity will be 3000 batteries a day. The company's Muncie plant is being expanded to increase production by 1000 batteries daily.

General Motors is opening a new warehouse in Des Moines which will become the distribution center for Iowa, serving all Chevrolet, Buick, Oldsmobile and Pontiac dealers in the State. It is a part of the corporation's expansion of parts handling facilities and will permit overnight delivery of orders by use of teletype communication with the master warehouse in Chicago.

Ford Steel Mills Nearing Completion

Ford's \$10,000,000 strip steel rolling mills and sheet steel cold finishing mills are nearing completion and will be ready for operation in September. So also is the new 1400-lb. pressure boiler at the Rouge plant, on which construction should be completed in three months and the turbo-generators installed in seven months. Unheralded, Ford started construction of a mill for making molded automobile parts from soy bean plastics, a \$5,000,000 project which is now almost completed. Mixers, presses and storage tanks have been installed and test parts are being turned out. With capacity for more than 100,000 parts a day, this mill will be the largest factory in the world devoted to processing farm products for industrial use, a work in which Ford has been a pioneer.

Michigan Steel Tube Products

Co., which reported net profit of \$239,978 or \$2.39 a share for the first six months of 1935, enjoyed a sales volume for the period equal to almost the entire volume for 1934. The company has developed several new products using welded tubing and during the past three years has added warehouse representation covering the entire country.

Chrysler Corp. has called for payment on Sept. 20 of the May 1, 1939, maturity of its outstanding notes amounting to \$5,000,000. This is the second \$5,000,000 payment on the \$25,000,000 loan arranged with depository banks and used to retire Dodge Brothers debentures. The 1939 note issue now anticipated will effect an interest saving of about \$140,000 annually.

Zenith Carburetor Co. is building an addition to its plant, including a laboratory, engineering building and a 75 per cent increase in floor space of the service department.

Paul W. Seiler has resigned as president and general manager of Yellow Truck & Coach Mfg. Co. and its subsidiaries, General Motors Truck Corp. and General Motors Truck Co., and is succeeded by Irving B. Babcock, executive vice-president of Yellow Truck.

Chevrolet's nation-wide demonstration campaign and sales contest this month is bringing good results, deliveries in the first 10 days of August totaling 26,359 units against 17,791 for the like period last year, and projections for the remainder of the month indicate August will be one of the largest months this year. Chevrolet produced 117,577 cars and trucks in July, the fourth month this year to pass the 100,000 mark.

Plymouth deliveries during week ended Aug. 17 eased off to 7565 units from 7831 for preceding week; Dodge passenger cars to 3596 from 3781; and Chrysler to 801 from 839. DeSoto showed nominal gain to 549 from 547, while Dodge truck deliveries increased to 1363 from 1262.

THE LARGEST EXHIBIT ON THE FLOOR

Pratt & Whitney

**BOOTH 906
CLEVELAND**

In the large hall, walk down the stairs to the lower level. It is directly in front of you. Almost five thousand square feet of floor space, the largest single exhibit in the show. The newest and finest of toolroom machines, many of them being introduced for the first time. A broad array of cutting tools—the latest in design, steel and metallurgy. A complete display of gages of almost unbelievable accuracy. Dozens of Pratt & Whitney experts in attendance, ready to show you everything and help you with your problems. Don't miss this huge Pratt & Whitney accuracy display. It will pay you dividends.

1860



1935

**HEADQUARTERS OF
ACCURACY**



NEWS OF THE WEEK

Cold-Finished Bar Extras Revised

LEADING producers have published new lists of extras, and the remaining interests in the cold-finished industry will follow suit promptly. The principal changes in the new card affect size and quantity extras on rounds and squares, turned and polished and turned and ground shafting.

Size extras on rounds have been increased in some cases \$3 to \$5 a ton. Quantity extras under 300 lb. have been increased from \$2.50 to \$3 a 100 lb.; those for 300 to 499 lb., from \$2 to \$2.25 a 100 lb. Approximately 75 per cent of the items in those brackets are sold by jobbers and are not usually classified as mill specifications.

Extras for turned and polished

New Extras for Size
Per 100 Lb. Net
Rounds

1/8 in. to 1/4 in.	\$3.00
1/4 in. to 3/8 in.	2.00
3/8 in. to 1/2 in.	1.25
1/2 in. to 5/8 in.	1.00
5/8 in. to 3/4 in.	.90
3/4 in. to 7/8 in.	.85
7/8 in. to 1 in.	.70
1 in. to 1 1/8 in.	.60
1 1/8 in. to 1 1/4 in.	.55
1 1/4 in. to 1 1/2 in.	.60
1 1/2 in. to 1 3/4 in.	.65
1 3/4 in. to 2 in.	.80
2 in. to 2 1/4 in.	.90
2 1/4 in. to 2 1/2 in.	1.00
2 1/2 in. to 2 3/4 in.	1.15
2 3/4 in. to 3 in.	1.25
3 in. to 3 1/4 in.	1.35
3 1/4 in. to 3 1/2 in.	1.45
3 1/2 in. to 3 3/4 in.	1.95
3 3/4 in. to 4 in.	2.40
4 in. to 4 1/4 in.	3.25
4 1/4 in. to 4 1/2 in.	3.75

New Extras for Turned and Polished and
Turned and Ground Shafting
Per 100 Lb.

1 1/8 in. to 1 1/4 in.	\$2.00
1 1/4 in. to 1 1/2 in.	1.80
1 1/2 in. to 1 3/4 in.	1.30
1 3/4 in. to 1 7/8 in.	.80
1 7/8 in. to 2 in.	.50
2 in. to 2 1/4 in.	.35
2 1/4 in. and larger.	No Extra
1 1/8 in. to 1 1/4 in.	\$2.30
1 1/4 in. to 1 1/2 in.	2.10
1 1/2 in. to 1 3/4 in.	1.60
1 3/4 in. to 1 7/8 in.	1.10
1 7/8 in. to 2 in.	.80
2 in. to 2 1/4 in.	.65
2 1/4 in. and larger.	.30

and turned and ground shafting have been advanced to compensate producers for actual cost conditions.

No other important changes have been made except that the cards include some extras for certain accurate tolerances, heretofore unpublished. The base price of 1.95c. a lb., Pittsburgh, for 10,000 to 19,999 lb. of one size, shape, grade and for shipment at one time, is unchanged. The new cards will not become effective before Oct. 1, when cold-finished producers will begin to absorb increased costs resulting from the narrowing of base size ranges on hot-rolled bars.

First Case Filed with National Labor Board

THE first complaint was filed with the newly created National Labor Relations Board Monday by the United Automobile Workers, charging the Bendix Products Corp., South Bend, Ind., with refusing to recognize collective bargaining with employees. Methods of procedure of the new board, set up under the Wagner-Connery labor disputes act, are expected to be established by this case when a hearing is scheduled.

The United Automobile Workers, affiliated with the American Federation of Labor, contended that the Bendix corporation has declined to recognize it as representing workers at the Bendix plant, employing some 14,000 workers. The board was asked to hold an election, the union claiming such an election would show that it is representative of a substantial majority of the workers.

New Auto Workers Union Formed

DETROIT, Aug. 27.—The constitutional convention of International Automobile Workers Union being organized by the American Federation of Labor got under way here yesterday, with 250 delegates present, representing 66 locals. William Green, who presented the newly formed union with a charter, declared that a major objective of organization is an annual wage for automobile workers to be made possible by economic planning. The new union will continue to some extent under supervision and direction of the A. F. of L., which from the start will help to finance it and reserve the right to name the first officers. Delegates divided into two factions over the question of whether to restrict the new union to production workers in automotive plants or to take in craft workers, such as those now allied with tool and die unions.

Midwest Steel Corpn. Seeks Lake Harbor

A HEARING was recently held in Chicago on the request of the Midwest Steel Corpn. for construction of a Government harbor on Lake Michigan, five miles east of Gary, Ind.

H. L. Gray, vice-president of the Midwest corporation, a subsidiary of the National Steel Corpn., said the company planned to erect a plant on its 1000-acre tract if the Government would build a harbor. The plant would provide employment for at least 1200 men in producing 3,000,000 tons of steel products annually. The estimated cost of the harbor would be \$3,000,000.

PERSONALS

Changes in Republic Personnel Announced

IMPORTANT changes in the personnel of the Republic Steel Corp. have been announced by T. M. Girdler, president and chairman of the board, and will become effective Sept. 16, the date set for meetings of the stockholders of Republic and Corrigan, McKinney & Co. to act on the plans to merge the two companies.

BENJAMIN F. FAIRLESS, vice-president of Republic, has resigned to take a position with the United States Steel Corp. R. J. WYSOR, who has been vice-president in charge of operations, has been elected vice-president and general manager, the latter being a new title in the Republic organization. C. M. WHITE, who has been the assistant operating head under Mr. Wysor, succeeds the latter as vice-president in charge of operations. These promotions were made at a meeting of the board of directors, Aug. 21.

Mr. Fairless, who is 45 years of age, became affiliated with the steel industry in 1914 or soon after finishing his college course, as a civil engineer for the Central Steel Co., Massillon, Ohio. He advanced through various departments engaged in the production of alloy steel to vice-president in charge of operations and then to vice-president and general manager, which position he held in 1926 when Central Steel Co. was merged with the United Alloy Steel Corp., Canton, as the Central Alloy Steel Corp.

Mr. Fairless was made vice-president and general manager of the new company and later its president. When Central Alloy and other steel companies were absorbed by Republic in December, 1929, Mr. Fairless became first vice-president of the new Republic organization.

R. J. WYSOR has been vice-president in charge of operations of Republic since the present corporation grew out of the merger in 1929. He had been general manager of the Jones & Laughlin Steel Corp., but resigned to join the Republic organization of which Mr. Girdler, formerly Jones & Laughlin president, had become the head. At the same time C. M. White, who was general superintendent of Jones & Laughlin, went to the new Republic organization with Mr. Wysor as his assistant.

F. C. T. DANIELS, chief metallurgist, Mackintosh-Hemphill Co., Pittsburgh, sailed from New York last week for London, where he will join other officials of the company in a series of conferences with British, French, German and Belgian users of American-designed rolling mill equipment. He will join Col. J. S. ERVIN, president, and F. H. MOYER, vice-president in charge of engineering of the company, who have been in England since early August, conferring with representatives of European companies interested in applying recent American developments in design and construction of metal-working machinery.

W. A. GIVENS, formerly general superintendent, Allegheny Steel Co., Brackenridge, Pa., has been appointed general manager. A. E. MILLER, who has been assistant general superintendent, succeeds Mr. Givens as general superintendent, and M. C. HARRIS, formerly manager of the service department, has been appointed assistant general manager.

DAVID B. HILL has joined the Beardsley & Piper Co., Chicago, engineering staff as sales and development engineer. Mr. Hill was educated in the Bamberg, S. C., public schools and at Clemson College in that State. He was graduated in 1912 in mechanical and electrical engineering. He had previously held positions with the Ford Motor Co., Palmer-Bee Co., and the American Radiator Co.

J. G. HOAG, who has been identified with the Osgood Co. for more than 15 years, and who has been connected with the Philadelphia office of that company, has been appointed manager of that branch, at 236 North Twenty-third Street. He has had a broad and varied experience in the field of excavating machinery, having been among the first to introduce Osgood revolving type shovels, cranes and draglines in the Eastern seaboard territory.

GEORGE KIRTLEY, formerly in charge of the Pittsburgh district for the Plymouth Locomotive Works, division of the Fate-Root-Heath Co., Plymouth, Ohio, has been appointed assistant to E. W. HEATH, vice-president in charge of locomotive sales and advertising, with headquarters at Plymouth.

O. R. LANE has been appointed representative for the Kennedy Valve Mfg. Co. in Oklahoma, Arkansas, Tennessee, eastern Missouri and southern Illinois and Indiana. He will make his headquarters in the Paul Brown Building, St. Louis.

J. H. BROWN, formerly Eastern sales manager of the Sullivan Machinery Co., has been made Midwest regional manager, with office in Chicago, of the mining and construction division of the Worthington Pump & Machinery Corp.

JAMES L. RILEY, formerly of the American Sheet & Tin Plate Co., has been made manager of stainless steel sales of Peter A. Frasse & Co., Inc., New York. He has been identified with the United States Steel Corp. since 1912.



B. F. FAIRLESS



R. J. WYSOR



C. M. WHITE

FLOYD T. WHITNEY, for the past 12 years associated with the Cohoes Rolling Mill Co., Cohoes, N. Y., has been appointed manager of sales of that company, succeeding H. R. Slater, who is general manager. For the past five years, Mr. Whitney has been in charge of the company's Chicago office, where he will be succeeded by J. J. Minskey.

DAN M. AVEY, editor of *Foundry*, has been reelected to serve a second year as president of the American Foundrymen's Association.



DAN M. AVEY

He has been an active member, having served as vice-president, director and on a number of committees.

EARL F. BLANK has been appointed director of the recently created personnel relations department of the Jones & Laughlin Steel Corp., Pittsburgh. Prior to joining the Jones & Laughlin organization as director of safety and welfare department in 1925, Mr. Blank was engaged in accident prevention and personnel administration with the Ford Motor Co. from 1913 to 1918; then with the Buick Motor Co. until 1923, when he was transferred to supervise the safety work of the General Motors Corp.

J. P. BOORE, for the past two years assistant to the president of the Summerill Tubing Co., Bridgeport, Pa., has been elected vice-president. GEORGE P. KRAEMER has been elected secretary and treasurer, but will continue as assistant manager of the Philadelphia branch of Edgar T. Ward's Sons Co., Pittsburgh. E. L. PARKER continues as president of the Summerill Tubing Co., which position he also holds with the Columbia Steel & Shafting Co. and its subsidiary, the Edgar T. Ward's Sons Co.

Demand is Sustained in Valleys — Scrap Advances

YOUNGSTOWN, Aug. 26. — Substantial gains in volume since the beginning of August are reported by leading producers in this district. Although production has temporarily leveled off since mid-month, at least one mill is planning to step up output by Sept. 1 to meet expected further expansion in demand.

In the current week the Youngstown Sheet & Tube Co. plans to run all of its open-hearth furnaces at the Campbell works and three out of 12 open-hearths at the Brier Hill plant. The company expects also to add its Bessemer converters by the beginning of next week. Demand meanwhile has been so great for open-hearth steel that the Brier Hill plant has been supplying a goodly share of ingots for working at the Campbell plant.

The Republic Steel Corp., probably will run 29 out of 46 open-hearth furnaces this week in the Youngstown-Canton-Massillon district, including Warren. There is a possibility that two or three furnaces may be suspended during the week. The Carnegie Steel Co.'s raw steel production in the current period will be around 45 per cent.

Sales executives in this district have found it difficult to discern any important change in the character of steel demand. Chief support is coming from a wide variety of small consuming industries, with automotive tonnage at the moment secondary in importance. Pipe demand has expanded to a point where one mill will resume operations at a large seamless plant this week. Flat-rolled steel is faring better than all other classes of steel products, since the large group of miscellaneous consumers are chiefly fabricators of consumer goods requiring sheets and strip. Some steel sellers here believe that the slump in automotive demand during the changeovers to new models will be short-lived, since no drastic changes in new car construction are believed in the wind. A moderate volume of automobile tonnage for new model assemblies already has come through, and the plans of at least one steel producer to increase output by next week bears out the belief that substantial buying will soon get under way. A leading automobile maker already has placed large orders for stainless steel for hub caps.

Valley steel activity will suffer slightly during the next two months from seasonal retrenchments in tin plate output, which this week has

dropped to around 45 per cent. Shipments have not slackened noticeably, but mill warehouse stocks are undergoing liquidation which is expected to take care of a substantial share of present pack requirements.

The local scrap market has advanced strongly since early August. Active buying by two leading independent mills during the past three weeks has sponsored an advance of \$1 a ton in No. 1 heavy melting steel, while No. 2 steel is unusually strong at \$13.25, delivered. At least 50,000 tons of scrap has changed hands here in the past three weeks, and, until broker orders are covered, little change in the strong tone of present prices is expected.

An improvement in pig iron demand from integrated foundry units is reported. Jobbing foundry melt is extremely low.

Reinforcing Steel

Awards 1360 Tons—New Projects
6150 Tons

AWARDS

St. Joseph, Mo., 300 tons, Quaker Oats Co. to Joseph T. Ryerson & Son.

Beverly Hills, Cal., 300 tons, building for W. & J. Sloane Co., to Blue Diamond Corp.

Los Angeles, 132 tons, Lafayette high school, to Blue Diamond Corp.

Los Angeles, 100 tons, addition to John Muir high school, to an unnamed bidder.

Leesville, Ohio, 100 tons, Muskingum Conservancy District Dam, to Fort Pitt Bridge Works Co.

Cleveland, 300 tons, administration building for Easterly Sewage Disposal plant, to Patterson-Leitch Co.

Cleveland, 125 tons, addition to Elwell-Parker Electric Co., to Kalman Steel Corp.

NEW REINFORCING BAR PROJECTS

Milbury, Mass., 320 tons, State highway and bridge.

Reading, Pa., 750 tons, reservoir; Y. E. O. Construction Co., Philadelphia, general contractor.

Huntington, W. Va., 125 tons, highway bridge; Truscon Steel Co. low bidder.

Louisville, Ky., 450 tons, building for Brown-Forman distillery.

State of Wisconsin, 116 tons, bridges in Dane and Outagamie counties; bids Sept. 10.

Ordgen, Utah, 4000 tons, 36 to 45-in. reinforced concrete pipe, alternates on welded steel and cast iron pipe; bids Sept. 4.

Flagstaff, Ariz., 100 tons, post office; bids rejected.

Los Angeles, 381 tons, Department of Water and Power, Specification 1768; bids opened.

Current Metal Working Activity Statistically Shown

These Data Are Assembled By THE IRON AGE from Recognized Sources And Are Changed Regularly As More Recent Figures Are Made Available

	July, 1935	June, 1935	July, 1934	Seven Months, 1934	Seven Months, 1935
Raw Materials:					
Lake ore consumption (gross tons) ^a	2,198,189	2,198,757	1,599,865	15,322,984	16,539,702
Coke production (net tons) ^b.....	.....	.....	2,432,000	20,021,203	.....
Pig Iron:					
Pig iron output—monthly (gross tons) ^a	1,520,263	1,552,514	1,224,826	11,023,139	11,319,263
Pig iron output—daily (gross tons) ^a	49,041	51,750	39,510	51,996	53,393
Castings:					
Malleable castings—production (net tons) ^a....	.....	27,548	23,388	237,429	.....
Malleable castings—orders (net tons) ^a.....	.....	25,668	21,862	229,509	.....
Steel castings—production (net tons) ^a.....	.....	27,665	46,182	295,666	.....
Steel castings—orders (net tons) ^a.....	.....	30,257	41,822	315,372	.....
Steel Ingots:					
Steel ingot production—monthly (gross tons) ^a ..	2,270,224	2,230,893	1,489,453	17,892,007	18,294,915
Steel ingot production—daily (gross tons) ^a	87,316	89,236	59,578	98,851	101,077
Steel ingot production—per cent of capacity ^a ..	39.44	40.31	27.06	44.79	46.70
Employment in Steel Industry:					
Total employees ^a.....	.....	416,732	424,126	425,161	.....
Total payrolls (thousands of dollars) ^a.....	.....	\$41,903	\$34,913	\$293,314	.....
Average hours worked per week ^a.....	.....	31.4	25.8	32.9	.....
Finished Steel:					
Trackwork shipments (net tons) ^a	4,054	4,210	5,226	33,873	25,629
Sheet steel sales (net tons) ^c	206,313	128,957	72,517	1,258,161	1,351,298
Sheet steel production (net tons) ^c	145,505	143,309	85,286	1,334,517	1,371,396
Fabricated shape orders (net tons) ^d.....	.....	117,477	75,257	670,445	.....
Fabricated shape shipments (net tons) ^d.....	.....	85,568	103,010	565,081	.....
Fabricated plate orders (net tons) ^d.....	.....	17,914	12,523	151,356	.....
Reinforcing bar awards (net tons) ^d.....	.....	14,985	14,595	125,480	.....
U. S. Steel Corpn. shipments (tons) ^b	547,794	578,108	369,938	4,048,833	4,101,793
Ohio River steel shipments (net tons) ¹	77,464	80,620	60,005	396,437	486,112
Fabricated Products:					
Automobile production, U. S. and Canada ^a	350,118	377,065	276,047	2,072,394	2,723,589
Construction contracts, 37 Eastern States ¹	\$159,249,900	\$148,005,200	\$119,662,300	\$973,764,200	\$855,756,700
Steel barrel shipments (number) ^a.....	.....	501,730	608,644	4,434,758	.....
Steel furniture shipments (dollars) ^a.....	.....	\$1,137,173	\$863,439	\$6,700,150	.....
Steel boiler orders (sq. ft.) ^a	519,061	391,497	385,218	2,301,268	3,190,086
Locomotive orders (number) ^m.....	.....	3	0	83	.....
Freight car orders (number) ^m.....	.....	5,151	0	23,383	.....
Machine tool index ⁿ	119.8	91.1	34.7	†38.6	94.7
Foundry equipment index ⁿ	93.3	100.1	50.7	†62.5	†98.3
Foreign Trade:					
Total iron and steel imports (gross tons) ^p.....	.....	33,208	17,676	185,314	.....
Imports of pig iron (gross tons) ^p.....	.....	6,583	2,997	68,383	.....
Imports of all rolled steel (gross tons) ^p.....	.....	19,678	10,900	66,863	.....
Total iron and steel exports (gross tons) ^p.....	.....	289,687	233,186	1,486,356	.....
Exports of all rolled steel (gross tons) ^p.....	.....	65,319	74,525	569,288	.....
Exports of finished steel (gross tons) ^p.....	.....	60,643	64,205	429,310	.....
Exports of scrap (gross tons) ^p.....	.....	215,098	155,812	894,660	.....
British Production:					
British pig iron production (gross tons) ^q	547,300	529,300	528,300	3,426,700	3,719,300
British steel ingot production (gross tons) ^q	803,300	770,000	718,200	5,225,500	5,604,500
Non-Ferrous Metals:					
Lead production (net tons) ^a.....	.....	33,002	31,881	245,578	.....
Lead shipments (net tons) ^a.....	.....	26,978	29,479	207,923	.....
Zinc production (net tons) ^a	35,055	34,677	24,756	208,764	245,042
Zinc shipments (net tons) ^a	32,241	29,393	26,966	216,862	247,324
Deliveries of tin (gross tons) ^a	5,290	4,615	3,575	26,020	33,680

*Preliminary. †Three Months' Average.

Source of figures: ^aLake Superior Iron Ore Association; ^bBureau of Mines; ^cTHE IRON AGE; ^dBureau of the Census; ^eAmerican Iron and Steel Institute; ^fNational Association of Flat-Rolled Steel Manufacturers; ^gAmerican Institute of Steel Construction; ^hUnited States Steel Corp.; ⁱUnited States Engineer, Pittsburgh; ^jWhen preliminary, from Automobile Manufacturers Association—Final figures from Bureau of the Census; ^kF. W. Dodge Corp.; ^lRailway Age; ^mNational Machine Tool Builders Association; ⁿFoundry Equipment Manufacturers Association; ^oDepartment of Commerce; ^pBritish Iron and Steel Federation; ^qAmerican Bureau of Metal Statistics; ^rAmerican Zinc Institute, Inc.; ^sNew York Commodities Exchange.

SUMMARY OF THIS WEEK'S BUSINESS

Steel Production Suffers Slight Setback

Ingot Output Dips to 50 Per Cent Following Decline in Tin Plate Mill Operations
And Delays in Automotive Specifications—Scrap Rises

A DECLINE in tin plate output and delays in automotive specifications have caused raw steel production to dip one-half point to 50 per cent of capacity in its first recession since Independence Day week. The setbacks have occurred in Chicago, where ingot output is off three points to 57 per cent of capacity, and in the Wheeling district, where the operating rate has fallen six points to 72 per cent. These losses were only partly offset by gains of two points to 38 per cent in the Philadelphia district and of five points to 38 per cent in the South. In other producing centers operations are holding at substantially unchanged rates, although in certain areas, among them the Tri-State district centering in Pittsburgh, curtailment is planned for the Labor Day weekend unless the pressure of spot orders proves too insistent.

The falling off in tin plate production, from 78 to 70 per cent of mill capacity, is in line with seasonal expectations. The holding up of automotive releases is confined chiefly to the Chicago district. At other centers, notably at Cleveland and Pittsburgh, shipping orders from the motor car industry are on the upgrade. However, irregularity in the flow of steel to the automobile makers is inevitable during a period of transition to new model production and should soon be succeeded by a steadily rising volume of orders, to take care of the accelerating assembly schedules planned for October and November.

THE sensitiveness of steel mill operations to fluctuations in automotive steel orders draws attention to the absence of large-scale demands from the building industry and the railroads, which in normal times serve as balancing factors. Structural steel awards of 12,400 tons compare with 23,608 tons a week ago; for the year to date they total 100,000 tons less than in the corresponding period in 1934. Rail and rolling stock purchases also continue to lag. The Chesapeake & Ohio plans to enter the market for rails late in September, but whereas last fall it ordered 35,000 tons it will probably place only 25,000 tons this year. The New York Central has asked for bids on 7400 tons, while the Pere Marquette is inquiring for 1700 tons of rails and 550 tons of tie plates.

Highway and grade separation work, which had been counted on as a source of large orders for steel, may soon be given a lift if, as is now expected, Washington raises its limit of \$1,400 per man on Federal allotments for road projects. This move is in order because the States have been unable or unwilling to supplement Federal funds.

Miscellaneous steel business, much of it directly or indirectly growing out of improved farmer buying power, continues to gain. Sheet production has risen five points to 70 per cent of capacity.

ADJOURNMENT of Congress, though ending many uncertainties, has introduced new ones. Among these is the fate of the Guffey coal act, which is generally regarded as unconstitutional and due for a court test at the hands of Southern and Western operators. Nevertheless its early effect may be to stabilize wobbly fuel prices. Steel companies with "captive" mines estimate that the law will raise coal and coke costs upward of 40c. a ton. With higher fuel costs in prospect there is talk of possible advances in pig iron prices. Higher costs due to the emergency freight surcharge, put into effect last May, were absorbed rather than passed on to buyers.

THE Italo-Ethiopian war scare has not yet affected foreign demand for American iron and steel other than scrap. A shipment of 7200 tons of scrap left Boston for Italy last week.

Scrap markets remain buoyant and a further advance in the Philadelphia district has caused THE IRON AGE scrap composite to rise from \$12.50 to \$12.58 a gross ton.

Iron and steel producers have discontinued the practice of filing prices with the American Iron and Steel Institute and as yet have failed to announce their fourth quarter quotations. However, many individual companies may formally open their books by Sept. 3. So far as can be ascertained no further changes in base prices are now contemplated except possibly on wire products. It now develops that the new method of quoting wire products announced last week is technically in effect. Practically, however, only those changes that represent reductions are in force, since the trade has been granted protection in other portions of the schedule.

New extras on cold-finished bars, including a number of advances, will not become effective until Oct. 1. Consideration is now being given to the elimination of the \$2 a ton discount to jobbers on galvanized sheets.

The Canadian Pacific has bought 1220 freight cars, while the Canadian National has ordered 1180 freight cars, eight snow plows and 15 locomotives.

THE IRON AGE composite prices for finished steel and pig iron are unchanged at 2.124c. a lb. and \$17.84 a gross ton respectively.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous;
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron

Per Gross Ton:	Aug. 27, 1935	Aug. 20, 1935	July 30, 1935	Aug. 28, 1934
No. 2 fdy., Philadelphia.....	\$20.3132	\$20.3132	\$20.3132	\$20.26
No. 2, Valley furnace.....	18.50	18.50	18.50	18.50
No. 2 Southern, Cln'tl.....	19.2007	19.2007	19.2007	19.13
No. 2, Birmingham†.....	14.50	14.50	14.50	14.50
No. 2 foundry, Chicago*.....	18.50	18.50	18.50	18.50
Basic, del'd eastern Pa.....	19.8132	19.8132	19.8132	19.76
Basic, Valley furnace.....	18.00	18.00	18.00	18.00
Malleable, Chicago*.....	18.50	18.50	18.50	18.50
Malleable, Valley.....	18.50	18.50	18.50	18.50
L. S. charcoal, Chicago.....	24.2528	24.2528	24.2528	24.04
Ferromanganese, seab'd car-lots.....	85.00	85.00	85.00	85.00

†This quotation is for delivery in South; in the North prices are 38c. a ton under delivery quotations from nearest Northern furnace.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Finished Steel

Per Lb.	Aug. 27, 1935	Aug. 20, 1935	July 30, 1935	Aug. 28, 1934
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.40	2.40	2.40	2.40
Hot-rolled annealed sheets, No. 24, Gary.....	2.50	2.50	2.50	2.50
Sheets, galv., No. 24, P'gh...	3.10	3.10	3.10	3.10
Sheets, galv., No. 24, Gary...	3.20	3.20	3.20	3.20
Hot-rolled sheets, No. 10, P'gh	1.85	1.85	1.85	1.85
Hot-rolled sheets, No. 10, Gary	1.95	1.95	1.95	1.95
Wire nails, Pittsburgh.....	2.40	2.60	2.60	2.60
Wire nails, Chicago dist. mill	2.45	2.65	2.65	2.65
Plain wire, Pittsburgh.....	2.30	2.30	2.30	2.30
Plain wire, Chicago dist. mill	2.35	2.35	2.35	2.35
Barbed wire, galv., P'gh.....	2.80	3.00	3.00	3.00
Barbed wire, galv., Chicago dist. mill.....	2.85	3.05	3.05	3.05
Tin plate, 100 lb. box, P'gh..	\$5.25	\$5.25	\$5.25	\$5.25

Scrap

Per Gross Ton:				
Heavy melting steel, P'gh...	\$13.00	\$13.00	\$12.75	\$11.00
Heavy melting steel, Phila...	12.00	11.75	10.75	9.75
Heavy melting steel, Ch'go...	12.75	12.75	11.25	9.00
Carwheels, Chicago.....	12.75	12.75	11.75	9.50
Carwheels, Philadelphia.....	11.75	11.25	11.25	11.25
No. 1 cast, Pittsburgh.....	14.25	14.00	13.50	11.75
No. 1 cast, Philadelphia.....	11.75	11.25	11.25	11.75
No. 1 cast, Ch'go (net ton)...	11.00	11.00	10.00	8.00
No. 1 RR. wrot., Phila.....	11.75	10.25	10.25	11.25
No. 1 RR. wrot., Ch'go (net)...	9.50	9.50	9.00	7.25

Rails, Billets, etc.

Per Gross Ton:				
Rails, heavy, at mill.....	\$36.37½	\$36.37½	\$36.37½	\$36.37½
Light rails, Pittsburgh.....	35.00	35.00	35.00	35.00
Rerolling billets, Pittsburgh..	27.00	27.00	27.00	27.00
Sheet bars, Pittsburgh.....	28.00	28.00	28.00	28.00
Slabs, Pittsburgh.....	27.00	27.00	27.00	27.00
Forging billets, Pittsburgh...	35.00	35.00	32.00	32.00
Wire rods, Pittsburgh.....	38.00	38.00	38.00	38.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb...	1.70	1.70	1.70	1.70

Finished Steel

Per Lb.	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.80	1.80	1.80	1.80
Bars, Chicago.....	1.85	1.85	1.85	1.85
Bars, Cleveland.....	1.85	1.85	1.85	1.85
Bars, New York.....	2.15	2.15	2.15	2.13
Plates, Pittsburgh.....	1.80	1.80	1.80	1.80
Plates, Chicago.....	1.85	1.85	1.85	1.85
Plates, New York.....	2.09	2.09	2.09	2.08
Structural shapes, P'gh.....	1.80	1.80	1.80	1.80
Structural shapes, Chicago...	1.85	1.85	1.85	1.85
Structural shapes, New York...	2.06½	2.06½	2.06½	2.05½
Cold-finished bars, Pittsburgh	1.95	1.95	1.95	2.10
Hot-rolled strips, Pittsburgh...	1.85	1.85	1.85	1.85
Cold-rolled strips, Pittsburgh	2.60	2.60	2.60	2.60

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt.....	\$3.25	\$3.25	\$3.25	\$3.85
Foundry coke, prompt.....	4.00	4.00	3.40	4.60

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, refinery..	8.25	8.25	7.75	8.75
Lake copper, New York.....	8.62½	8.62½	8.12½	9.12½
Tin (Stralts), New York.....	\$9.25	50.75	52.70	51.70
Zinc, East St. Louis.....	4.60	4.60	4.40	4.25
Zinc, New York.....	4.97½	4.97½	4.77½	4.60
Lead, St. Louis.....	4.20	4.10	4.00	3.60
Lead, New York.....	4.35	4.25	4.15	3.75
Antimony (Asiatic), N. Y....	13.00	13.00	12.75	8.62½

The Iron Age Composite Prices

Finished Steel

Aug. 27, 1935	2.124c. a Lb.
One week ago	2.124c.
One month ago	2.124c.
One year ago	2.124c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products make 85 per cent of the United States output.

	HIGH	Low
1935	2.124c., Jan. 3;	2.124c., Jan. 8
1934	2.199c., April 24;	2.008c., Jan. 2
1933	2.015c., Oct. 3;	1.867c., April 18
1932	1.977c., Oct. 4;	1.926c., Feb. 2
1931	2.037c., Jan. 13;	1.945c., Dec. 29
1930	2.273c., Jan. 7;	2.018c., Dec. 9
1929	2.317c., April 2;	2.273c., Oct. 29
1928	2.286c., Dec. 11;	2.217c., July 17
1927	2.402c., Jan. 4;	2.212c., Nov. 1

Pig Iron

\$17.84 a Gross Ton
17.84
17.84
17.90

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

HIGH	Low
\$17.90, Jan. 8;	\$17.83, May 14
17.90, May 1;	16.90, Jan. 27
16.90, Dec. 5;	13.56, Jan. 3
14.81, Jan. 5;	13.56, Dec. 6
15.90, Jan. 6;	14.79, Dec. 15
18.21, Jan. 7;	15.90, Dec. 16
18.71, May 14;	18.21, Dec. 17
18.59, Nov. 27;	17.04, July 24
19.71, Jan. 4;	17.54, Nov. 1

Steel Scrap

\$12.58 a Gross Ton
12.50
11.58
9.92

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

HIGH	Low
\$12.58, Aug. 27;	\$10.33, April 23
13.00, Mar. 13;	9.50, Sept. 25
12.25, Aug. 8;	6.75, Jan. 3
8.50, Jan. 12;	6.43, July 5
11.33, Jan. 6;	8.50, Dec. 29
15.00, Feb. 18;	11.25, Dec. 9
17.58, Jan. 29;	14.08, Dec. 3
16.50, Dec. 31;	13.08, July 2
15.25, Jan. 11;	13.03, Nov. 22

Gains in Demand Offset Losses at Pittsburgh



Local and Valley Ingot Rates Hold
But Output Drops in Wheeling District
—Cold-Finished Bar Extras Revised

PITTSBURGH, Aug. 27.—Gains and losses in demand for various finishes of steel are fairly well balanced, and the volume of new business and specifications is largely unchanged. The most notable improvement here is reported in automotive steel orders, while a seasonal setback is being suffered in tin plate demand. Miscellaneous tonnage is astonishingly steady.

For the present week ingot output in the Pittsburgh district will average unchanged at 44 per cent of capacity. Production in the Valleys and nearby northern Ohio mills also is holding at 58 per cent. Downward revisions in tin plate production in the Wheeling district account largely for a drop of six points to 72 per cent.

Most producers in the Tri-State area plan to revise open-hearth schedule downward over Labor Day week-end unless the present urgent character of most spot orders prohibits the recess.

All producers of cold-finished bars will have announced this week the new size and quantity extras and other changes on rounds and squares, turned and polished and turned and ground shafting. Although no general announcement of fourth quarter prices is expected, individual companies may publicly declare the opening of books for the fourth quarter by Sept. 3. Some producers in the Pittsburgh district already have stated fourth quarter prices in cases where projects planned for later maturity required forward quotations.

Pig Iron

Small-lot demand continues on even keel. The outlook for any major buying of steel-making grades still is obscure. Announcement of fourth quarter quotations either this or next week will be a mere formality and will have little bearing on bookings, since forward purchasing still seems to be a discarded custom. Current quotations probably will be reaffirmed for the

final quarter. Although long-range effects of the Guffey bill on fuel prices depend almost entirely upon whether the bill eventually is declared constitutional, pig iron producers are not unaware of the potential increased costs facing them. Conservative estimates of higher coal and coke costs, per ton, range from 20c. to 30c., with "captive" mine producers claiming 40c. a ton additional burden if the bill and all its implications finally prevail.

Semi-Finished Steel

Non-integrated mills are becoming more inclined to cover for extended delivery, but few mills have built up protective inventories. While sheet bars continue to lead in current volume of deliveries, seasonal declines in tin plate output are causing a slight decline in the total movement. Demand for forging quality billets is in fair evidence, since most regular customers are being covered up to the fourth quarter at the old price of \$32 a gross ton. The advanced quotation of \$35 will become generally effective for fourth quarter shipment. Demand for wire rods is fairly strong. Skelp also is moving in good volume. No other changes in base prices are in early prospect, and producers here are quite generally agreed that present quotations will be carried over into fourth quarter.

Tubular Products

Slight improvement in demand for mechanical tubing and boiler tubes is reported in this district. Volume of oil country business is quite steady, and there are signs of possible improvement in the making. Experimental work is progressing in the new Odessa oil field in northern Louisiana, which, if successful, may create a substantial demand for oil country goods. The field, formerly a large source for natural gas, requires deep drilling. Tube mill schedules in the

Pittsburgh area are running between 35 and 45 per cent.

Bars

Automotive demand is increasing rather gradually, while calls from miscellaneous sources are unusually well sustained. Forging bars are in better demand, as are alloy bars for special work. At least one producer in the Pittsburgh district has expressed willingness to quote on fourth quarter tonnage, but few consumers are displaying interest that far ahead. Although no formal announcement is forthcoming, it is considered likely that 1.80c. a lb., Pittsburgh, will apply generally to shipments in the final quarter.

Wire Products

The new method of quoting on steel wire is effective only in instances where the new scale of quantity extras reflects a reduction to the consumer. Where the schedule provides for increases, consumers are being protected at the old basis for the remainder of third quarter. Demand for manufacturers' wire is leading, although jobbers are beginning to cover more freely on merchant items.

Reinforcing Steel

New business continues in moderate volume. Although some contracts for State road construction are nearing the letting stage, reinforcing bar requirements, excepting those for small projects, are not likely to be placed before next spring. No award has been announced on the Los Angeles Metropolitan Water District project, on which bids were opened recently. Extras on bending and engineering and detailing have been revised in some districts, but general application probably will not be accomplished until late in this quarter. Other revisions in extras are reported to be in the making, but no announcements are believed imminent.

Bolts, Nuts and Rivets

Demand is rather sluggish, although August order books are no worse off than they were in July and June. While leading producers have made attempts to stabilize prices, weakness persists in certain Mid-Western consuming areas. In the face of present unsettlement, some consumers are specifying only for bare needs, prior to announcement of fourth quarter discounts within the next fortnight.

Sheets

Improved demand from the automotive industry, as well as from miscellaneous sources, has pushed output for the sheet industry five points higher to about 70 per cent of capacity. Auto body makers are

ordering for both current and new model construction. Calls for miscellaneous items are heaviest from the Mid-West and reflect improved conditions in farm areas.

Producers probably will make individual announcements this week of fourth quarter base prices, which will be unchanged.

Tin Plate

Operating schedules are becoming more erratic, in line with seasonal influences. Production for the tin plate industry this week, while eight points lower at 70 per cent of capacity, still is regarded as unusual for this season. Shipments are generally far in excess of production, and liquidation of mill stocks in some directions this week will be sharp. A leading independent tin plate mill, which was idle last week, has resumed on an 80 per cent basis, but a producer in a nearby district has drastically cut hot mill schedules.

Strip Steel

Demand is expanding gradually, but automotive tonnage is still too lean to provide a real impulse for heavier operating schedules. Cold strip output, at around 42 per cent, is running slightly ahead of hot strip production, which is averaging 40 per cent.

Plates and Shapes

The past week revealed little change in demand for these products. About 3700 tons of plates for ten barges, to be constructed by the Dravo Contracting Co., has been placed with a leading producer. About 1460 tons of structural steel for a State highway bridge at Parkersburg, W. Va., has been awarded to McClintic-Marshall Corp.

Coal and Coke

With the prospective signing of the Guffey bill, the focal point in this market, large industrial consumers and railroads are awaiting

further developments relating to the probable effects of the bill on the coal and coke industry. While it is considered that the early effects of the bill will be to stabilize, at least in a small way, the present wobbly price structure, considerable doubt as to the constitutionality of the measure and the unwillingness of some producers in the Southern and Western districts to accept its dictates foreshadow a period of uncertainty. Seasonal demand for domestic-size fuels represents the only bright spot in the market.

Scrap

Dealers are fairly well covered against old orders, and bidding for

scrap is not quite so pressing as it was early in August. Regardless of the smaller backlogs brokers are not generally anxious to move much tonnage at prevailing prices. On the other hand, it is difficult to find any interest on the part of large mills in the Pittsburgh district. Activity is more largely centered in the Wheeling district, where prices being paid by dealers average above those ruling in the immediate Pittsburgh area. Machine shop turnings have moved 50c. a ton higher and blast furnace scrap likewise is stronger. No. 1 cast has advanced 25c. a ton further. No. 1 heavy melting steel remains unchanged at \$13.25, delivered Pittsburgh mill.

Large Tonnages Pending on Coast

SAN FRANCISCO, Aug. 26.—With the Metropolitan Water District expected to place awards shortly on two major steel contracts, Los Angeles continues to hold the spotlight on the Coast. Identical bids were submitted to the district by Concrete Engineering Co., Soule Steel Co., Truscon Steel Co. and Blue Diamond Corp. for the furnishing of 60,320 tons of reinforcing steel. Security Materials Co., Consolidated Steel Corp. and J. W. Black were low on certain schedules.

Pacific Coast Steel Corp. is low bidder on the towers for the 237-mile transmission line from Boulder dam. Either 5500 or 5750 tons of structural steel is involved, depending on whether the aluminum or copper conduit alternate is accepted. A separate contract calls for 2000 tons of steel-reinforced aluminum or 3000 tons of steel-

reinforced copper conduit. Nearly identical bids were received.

Outstanding among the week's lettings was 590 tons of structural steel for a telephone building at San Francisco, which went to Golden Gate Iron Works. Blue Diamond Corp. booked 432 tons of reinforcing bars on two projects in southern California.

Bids will be opened Sept. 4 at Ogden, Utah, on the Ogden Canyon pipe line, on which three alternates call for 6500 tons of cast-iron pipe, 4000 tons of bars required for reinforced concrete pipe, or 4500 tons of welded steel pipe. At Oakland, Cal., plans are being completed for the Park Street bridge for which approximately 800 to 1000 tons of shapes will be required. A good number of projects involving minor tonnages are being listed.

It is reported that scrap being exported to the Orient continues to be about double the volume of a year ago. Warehouse business is holding its own.

Weekly Indications of Steel Activity

From THE IRON AGE

	Aug. 27, 1935	Aug. 20, 1935	July 30, 1935	Aug. 28, 1934	Average Year to Date	
					1935	1934
Steel ingot operations—Per cent of capacity	50.0	50.5	46.0	19.0	45.6	42.4

	Week Ended				Year to Date	
	Aug. 27, 1935	Aug. 20, 1935	July 30, 1935	Aug. 28, 1934	1935	1934
Fabricated structural steel awards.....	12,400	23,608	4,250	22,730	454,680	548,820
Fabricated plate awards.....	755	8,875	3,800	2,500	87,822	91,537
Sheet steel piling awards.....	0	0	300	400	33,865	42,435
Reinforcing bar awards.....	1,360	5,955	1,525	18,415	133,990	149,645

Chicago Ingot Rate Drops Three Points



Current Rate Is 57 Per Cent—Decline
Due Mainly to Delay in Automotive
Releases — Foundry Melt Still Rising

CHICAGO, Aug. 27.—Adjustments both up and down in ingot output are now taking place among the various mills, with the net result that there has been a loss of three points to 57 per cent of capacity. This situation is not alarming and does not reflect a shrinking market. In fact, producers believe the condition to be temporary inasmuch as specifications, and for that matter new buying, remain not far from the peak of the year. All other markets are gaining in activity. The pig iron market is gathering momentum without interruption and scrap appears to have held all gains both in consumption and in prices.

Such major industries as have been giving good support to shipments of iron and steel remain active, but automobile plants are, in some instances, delaying shipments, and therein lies the story insofar as reduced operations are concerned. The entire picture serves well to illustrate the handicap under which producers are laboring without the tonnage support of real building activity and business from the railroads. Demand has a sensitiveness that would soon be removed if either one or the other of these two major consumers would step into a faster stride. Crops of all kinds remain in excellent condition and are reported to be adequate for all domestic requirements with the possible exception of wheat, which may fall short of actual needs.

Pig Iron

The melt is increasing along all fronts with the exception of the machine tool industry, which has passed the pre-show rush and is settling back to the regular flow of business. Prices remain firm, and it is now only one week until announcement of fourth quarter quotations.

Coke

Shipments of foundry coke are steadily moving upward. Current quotations will be carried forward for deliveries to be made in September.

Reinforcing Bars

Most dealers are disappointed in the volume of late August business. There is still a fair amount of small tonnage work, but with the exception of Mississippi River projects there is little of size before the trade. In a number of instances low bidders have been announced on locks and dams, but contractors have not received formal notices and as a consequence the needed bars are slow in reaching shop books. Land has been bought for the first Government housing project in Chicago. Bids have been thrown out on several small post offices.

Cast Iron Pipe

Inquiries and orders are all for small tonnages and there is little business of size in sight. Sellers are still eyeing Government funds, but there is much confusion of thought as to when and to what extent that money will help the cast iron pipe business. Some believe that bids will not be asked until early in 1936. Chicago is asking for bids on Aug. 30 on 100 12-ft. lengths of 20-in. and 200 12-ft. lengths of 24-in. pipe.

Rails

Sellers have lost some of their optimism regarding railroad purchases. Indications now point to hand-to-mouth rail orders, which will spread needs over the next eight or nine months, very much as was done during the past year. Early September may mark the purchase of 35,000 tons by the Chesapeake & Ohio and on Sept. 4 the New York Central will take bids on 7400 tons. Accessory business is light and scattered and users are finding little need for new light rail tonnages.

Wire Products

Rural buying is on a broader scale and producers expect it to grow rapidly from now on through September, but they frankly admit that wire products production cannot swing into a real stride without the aid of building and railroad

buying, both of which are comparatively quiet. There seems to be some chance that the building industry will contribute business, but the railroad side of the picture remains very black. The new quotations to jobbers have been effective for about a week, but the response has been light, largely for the reason that old contracts cover most requirements for the remainder of this quarter. In all probability fourth quarter prices will be announced the first Tuesday in September. There is some urge to advance quotations, though the strongest impulse at the moment is to maintain present price levels and drive for heavier tonnage. Output has advanced to 50 per cent of capacity.

Plates

This market is handicapped not only because there are few projects calling for plates but also because of the extreme slowness with which the few jobs contemplated come out for figures. The railroad market, usually a fruitful source of plate business, is dead except for an inquiry for the repair of 250 to 1000 hopper cars for the Cambria & Indiana. Tonnages being taken by miscellaneous users are very light and scattered.

Structural Material

Both awards and inquiries are in better volume, being 9500 tons and 13,000 tons respectively. A post office at San Antonio, Tex., and a Mississippi River dam are among the largest awards, and 9000 tons of highway work in Missouri stands out among fresh inquiries. Bids on dam No. 11 at Dubuque, Iowa, requiring 4000 tons of structural steel, were taken today.

Bars

Demand remains in good volume, though rollings are somewhat lighter for the reason that some automotive specifications are for deferred rolling. Most major consumers are exerting steady pressure against mills and miscellaneous demand remains in high gear. Road machinery builders give evidence of having devised schedules that are far more uniform throughout the year than has heretofore been the practice.

Sheets

Demands from automobile centers are giving excellent support to sheet mills, which in some instances are operating near capacity. Galvanized sheets are moving in moderately improved volume and warehouses are making steady demands against mills. Producers are not

yet ready to announce fourth quarter prices.

Scrap

Large consumers are staying out of the market, but dealers are active covering recent contracts and they do not hesitate to pay the railroads \$13.60 a gross ton delivered for heavy melting steel. Much country scrap is badly mixed and off grade, with the result that incoming shipments are not disturbing price structures and a downward readjustment in quotations is not in sight. Another important factor is the strict rigidity with which mills and large consumers are inspecting all receipts. Offerings are being made by the Milwaukee Road, the Burlington and the Rock Island.

Output Sustained At Buffalo

BUFFALO, Aug. 27.—Pig iron producers look for good fall business, this attitude deriving largely from the steady manner in which bookings have held up during the summer months. The seasonal lull has been felt, but nothing like it was last year. Foundry operations are spotty, but in spite of this there has been a small but lasting demand. Seven stacks are blowing.

Nine open-hearths continue in operation at Bethlehem's Lackawanna plant, four at Republic Steel Corp., and one at Wickwire-Spencer Steel Corp. The Seneca sheet division of Bethlehem shows a slight improvement, with operations at 60 per cent, as against 50 per cent for the past three weeks.

The Central Grange League Federation will construct a new office building at Ithaca, N. Y. The contract for the fabrication of the steel has been let to a Buffalo firm.

This district shows one of the most potentially strong scrap markets in months, though there has been little buying. The latest purchase was about 2000 tons of No. 1 and No. 2 heavy melting steel at \$11.50 and \$10.50 respectively. Dealers believe that the market is actually much stronger than this, pointing to Chicago at \$12.50 to \$13, a market which usually trails Buffalo's. All scrap is closely held and it is becoming increasingly difficult to pick up a tonnage. With Youngstown paying \$13.25 for No. 2 and \$14 for No. 1, shipments of scrap from this territory are practicable. The fact that the eastern Pennsylvania market also is strong makes for a scarcity here.

Active Export Scrap Demand at Boston

BOSTON, Aug. 27.—The export scrap market continues active at very firm prices. A boat with 7200 tons left here last week for Italy, and several thousand tons are scheduled to leave here this week for a port to be announced later. Nos. 1 and 2 steel constitute the bulk of exports, but last week's boat took a considerable tonnage of engine blocks and stove plates, the latter at \$6.25 a ton, delivered dock. Breakable cast is again moving in volume to eastern Pennsylvania, generally at \$5.75 a ton, f.o.b., and shipments of turnings and bundled skeleton to the Pittsburgh territory have picked up. Most recent sales of turnings were at \$3.25 a ton, f.o.b., and of skeleton at \$6. Business in machinery and textile cast is very largely in truck lots.

Current pig iron business is in carlots. Books for fourth quarter business will open Sept. 1, with no change in prices. A number of foundries that were busy report a slump in activities, with no indication when business will improve. As a result the current New England melt is not more than 20 per cent of rated capacity, as against 25 to 30 per cent heretofore.

Indications are that most of the preliminary work at the Eastport, Me., hydroelectric power project will be done by the Government itself. Bids for various kinds of work submitted so far have run 100 per cent above Government estimates, largely because of the wage scale requirements.

Bookings Dip in Southern Ohio

CINCINNATI, Aug. 27.—Withdrawal of automobile manufacturers from heavy purchasing, pending the development of new models, has failed to disturb the district sheet steel market to any noticeable degree. Bookings have declined a few points to about 55 per cent of capacity, but continued heavy demand from electrical appliance, jobbing and miscellaneous sources has tended to offset the lower rate of automotive purchasing. Galvanized sheets are in steady demand and mills have held rolling schedules in these units at about 75 per cent. Prices are steady and no talk of change appears to arouse substantial interest.

Pig iron bookings show no change from the month's average of 700 tons a week, and shipping

requisitions are being filled at the contract rate. Melt has not changed materially, although stove melters have eased operations a trifle. Of course, this is offset to some degree by the steady uptrend in the machinery melt.

Oven assurances that inventories are sufficient to meet demand for a reasonable period have allayed consumers' fears of labor difficulty in the mining areas. No flurry to cover coke requirements in anticipation of future needs has developed, current specifications being for needs. New business is negligible.

The scrap market is still a dealers' market, but no change in bid lists has been made.

Demand Improves In South

BIRMINGHAM, Aug. 27.—The upward swing in demand for sheets and wire products continues at a most encouraging rate. In the last three weeks there has been a steady increase in the volume of current orders. As country buying is just starting, the outlook for the next several months is exceedingly good. Buying is mostly on a spot basis and in small lots, but orders are coming in daily at a good rate. Structural and plate tonnage has also shown improvement.

Base prices remain unchanged but jobbers are to be quoted on a different basis than heretofore. This change for wire products became effective around Aug. 12, while the change for sheets will become effective around Oct. 1.

Nine open-hearth units were worked last week and the same schedule is planned for this week.

Spot sales of pig iron are also showing some improvement and August will be a better month than July. Last week furnace operations were increased to six, when the Tennessee Coal, Iron & Railroad Co. resumed Fairfield No. 6, which had been banked since July 29.

The Atlanta, Birmingham & Coast railroad has renewed its coal contract with the Woodward Iron Co., which calls for approximately 100,000 tons of coal.

An expansion program authorized at the Gary, Ind., plant of the American Sheet & Tin Plate Co. calls for the construction of continuous sheet and strip rolling equipment to cost \$20,000,000.

Prices of Finished Steel and Iron Products

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel	Base per Lb.
Fab. Pittsburgh	1.85c
Fab. Chicago	1.85c
Fab. Gary	1.85c
Fab. Duluth	1.95c
Del'd Detroit	1.95c
Fab. Cleveland	1.95c
Fab. Buffalo	1.95c
Fab. Philadelphia	2.11c
Del'd New York	2.15c
Fab. Birmingham	1.95c
Fab. cars dock Gulf ports	2.25c
Fab. cars dock Pacific ports	2.35c

Rail Steel

(For merchant trade)

Fab. Pittsburgh	1.75c
Fab. Chicago	1.75c
Fab. Gary	1.75c
Fab. Moline, Ill.	1.75c
Fab. Cleveland	1.75c
Fab. Buffalo	1.75c
Fab. Birmingham	1.85c
Fab. cars dock Gulf ports	2.10c
Fab. cars dock Pacific ports	2.25c

Billet Steel Reinforcing

(Straight lengths as quoted by distributors)	
Fab. Pittsburgh	2.05c
Fab. Chicago	2.10c
Fab. Gary	2.10c
Del'd Detroit	2.20c
Fab. Cleveland	2.10c
Fab. Youngstown	2.15c
Fab. Buffalo	2.15c
Fab. Birmingham	2.15c
Fab. cars dock Gulf ports	2.45c
Fab. cars dock Pacific ports	2.45c

Rail Steel Reinforcing

(Straight lengths as quoted by distributors)	
Fab. Pittsburgh	1.95c
Fab. Chicago	1.95c
Fab. Gary	1.95c
Fab. Cleveland	1.95c
Fab. Youngstown	1.95c
Fab. Buffalo	1.95c
Fab. Birmingham	1.95c
Fab. cars dock Gulf ports	2.35c
Fab. cars dock Pacific ports	2.35c

Iron

Fab. Chicago	1.85c
Fab. Terre Haute, Ind.	1.75c
Fab. Louisville, Ky.	1.75c
Fab. Danville, Pa.	1.85c
Fab. Berwick, Pa.	1.75c

Cold Finished Bars and Shafting*

	Base per Lb.
F.a.b. Pittsburgh	1.95c.
F.a.b. Chicago	2.00c.
F.a.b. Gary	2.00c.
F.a.b. Cleveland	2.00c.
F.a.b. Buffalo	2.05c.
Del'd Detroit	2.15c.
Del'd eastern Michigan	2.20c.

* In quantities of 10,000 to 19,000 lb.

Fence and Sign Posts

Angle Line Posts	Base per Net Ton
Fab. Pittsburgh	\$50.00
Fab. Chicago	50.00
Fab. Duluth	51.00
Fab. Cleveland	50.00
Fab. Birmingham	53.00
Fab. Houston, Orange, Beaumont, Galveston	59.00
Fab. Mobile	53.00
Fab. New Orleans, Lake Charles, Corpus Christi	59.00
Fab. cars dock Pacific ports	63.00

Plates

	Base per Lb.
Fab. Pittsburgh	1.85c
Fab. Chicago	1.85c
Fab. Gary	1.85c
Del'd Cleveland	1.95c
Fab. Coatesville	1.95c
Fab. Sparrows Point	1.95c
Del'd Philadelphia	1.95c
Del'd New York	2.05c
Fab. Birmingham	1.95c
Fab. cars dock Gulf ports	2.25c
Fab. cars dock Pacific ports	2.35c
Wrought iron plates, f.o.b. P'gh	2.25c

Floor Plates

Fab. Pittsburgh	2.35c
Fab. Chicago	2.45c
Fab. Coatesville	2.45c
Fab. cars dock Gulf ports	2.75c
Fab. cars dock Pacific ports	2.95c

Structural Shapes

	Base per Lb.
Fab. Pittsburgh	1.90c.
Fab. Chicago	1.85c.
Del'd Cleveland	1.995c.
Fab. Buffalo	1.90c.
Fab. Bethlehem	1.90c.
Del'd Philadelphia	2.015c.
Del'd New York	2.0635c.
Fab. Birmingham (standard)	1.95c.
Fab. cars dock Gulf ports	2.20c.
Fab. cars dock Pacific ports	2.35c.

Steel Sheet Piling

	Base per Lb.
F.o.b. Pittsburgh	2.15c.
F.o.b. Chicago	2.25c.
F.o.b. Buffalo	2.25c.
F.o.b. cars dock Gulf ports.....	2.60c.
F.o.b. cars dock Pacific ports.....	2.60c.

SHEETS, STRIP, TIN PLATE

TERNE PLATE

Sheets	Base per Lb.
Hot Rolled	
No. 10, f.o.b. Pittsburgh	1.85c
No. 10, f.o.b. Gary	1.95c
No. 10, del'd Detroit	2.05c
No. 10, del'd Phila.	2.15c
No. 10, f.o.b. Birmingham	2.05c
No. 10, f.o.b. cars dock Pacific ports	2.40c

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	2.40c
No. 24, f.o.b. Gary	2.50c
No. 24, del'd Detroit	2.60c
No. 24, del'd Phila.	2.71c
No. 24, f.o.b. Birmingham	2.55c
No. 24, f.o.b. cars dock Pacific ports	3.05c
No. 24, wrought iron, Pittsburgh	4.30c

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh	2.50c
No. 10 gage, f.o.b. Gary	2.60c
No. 10 gage, del'd Detroit	2.70c
No. 10 gage, del'd Phila.	2.81c
No. 10 gage, f.o.b. Birmingham	2.65c
No. 10 gage, f.o.b. cars dock Pacific ports	3.10c

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh	2.95c
No. 20 gage, f.o.b. Gary	3.05c
No. 20 gage, del'd Detroit	3.15c
No. 20 gage, del'd Phila.	3.26c
No. 20 gage, f.o.b. Birmingham	3.10c
No. 20, f.o.b. cars dock Pacific ports	3.50c

Galvanized Sheets

No. 24 gage, f.o.b. Pittsburgh	3.10c
No. 24 gage, f.o.b. Gary	3.20c
No. 24, del'd Phila.	3.31c
No. 24, f.o.b. Birmingham	3.25c
No. 24, f.o.b. cars dock Pacific ports	3.70c
No. 24, wrought iron, Pittsburgh	4.95c

Long Ternes

No. 24, unassorted 8-lb. coating	3.45c
F.o.b. Pittsburgh	3.50c
F.o.b. cars dock Pacific ports	4.10c

Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh	2.10c
No. 20, f.o.b. Gary	2.20c
No. 20, f.o.b. Birmingham	2.70c
No. 20, f.o.b. cars dock Pacific ports	3.70c
No. 10, f.o.b. Pittsburgh	2.25c
No. 10, f.o.b. Gary	2.35c
No. 10, f.o.b. Birmingham	2.15c
No. 10, f.o.b. cars dock Pacific ports	3.10c

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.75c
No. 28, Gary	2.85c
No. 28, cars dock Pacific Coast	3.35c

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mill	\$5.25
Standard cokes, f.o.b. Gary	5.35
Standard cokes, f.o.b. cars dock Pacific ports	5.90

Terne Plate

(F.o.b. Pittsburgh)	(Per Package, 20 x 28 in.)
8-lb. coating I.C.	\$10.00
15-lb. coating I.C.	12.00
20-lb. coating I.C.	13.00
25-lb. coating I.C.	14.00
30-lb. coating I.C.	15.25
40-lb. coating I.C.	17.50

Hot-Rolled Hoops, Bands, Strips and Flats under 1/4 in.

	Base per Lb.
All widths up to 24 in., P'gh	1.45c.
All widths up to 24 in., Chicago	1.95c.
All widths up to 24 in., del'd De-	
troit	2.95c.
All widths up to 24 in., Birmingham	2.00c.
Cooperage stock, Pittsburgh	1.95c.
Cooperage stock, Chicago	2.05c.

Cold-Rolled Strips

	Base per Lb.
F.o.b. Pittsburgh	2.40c.
F.o.b. Cleveland	2.60c.
Del'd Chicago	2.85c.
F.o.b. Worcester	2.80c.

Fender Stock

No. 14, Pittsburgh or Cleveland	2.90c
No. 14, Worcester	2.95c
No. 20, Pittsburgh or Cleveland	2.30c
No. 20, Worcester	2.75c

Hot-Rolled Rail Steel Strips

	Base per Lb.
F.o.b. Pittsburgh	1.75c.
F.o.b. Chicago	1.75c.
F.o.b. Birmingham	1.85c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

To Manufacturing Trade	Per Lb.
Eight wire	2.30c
Spring wire	2.90c

Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.

To Large-Lot Buyers

	Base per Keg
Standard wire nails	\$2.40
Smooth coated nails	2.40

	Base per 100 Lb.
Annealed fence wire	\$2.45
Galvanized fence wire	2.80
Polished staples	3.10
Galvanized staples	3.35
Barbed Wire, galvanized	2.80
Twisted barbless wire	2.80
Woven wire fence, base column.....	58.00
Single loop bale ties, base column.....	53.00

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh's base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh): Duluth, Minn., and Worcester, Mass., mill prices are \$2 a ton over Pittsburgh (except for woven wire fence at Duluth, which is \$3 over Pittsburgh), and Birmingham mill prices are \$3 a ton over Pittsburgh.

On wire nails, barbed wire, staples and fence wire, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are \$6 a ton over Pittsburgh, while Pacific Coast prices are \$8 over Pittsburgh. Exception: on fence wire Pacific Coast prices are \$11 a ton above Pittsburgh. On staples and barbed wire, prices of \$6 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.

Wire Hoops, Twisted or Welded

Of List	
F.o.b. Pittsburgh	35 and 3 1/2 off
F.o.b. Chicago	35 off

STEEL AND WROUGHT PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld	Steel	Black Galv.	Inches	Wrought Iron	Black Galv.	Inches
1/2	31 1/2	29 1/2	1/2	31 1/2	29 1/2	1/2
3/4	33 1/2	31 1/2	3/4	33 1/2	31 1/2	3/4
1	35 1/2	33 1/2	1	35 1/2	33 1/2	1
1 1/4	37 1/2	35 1/2	1 1/4	37 1/2	35 1/2	1 1/4
1 1/2	38 1/2	36 1/2	1 1/2	38 1/2	36 1/2	1 1/2
1 3/4	40 1/2	38 1/2	1 3/4	40 1/2	38 1/2	1 3/4
2	42 1/2	40 1/2	2	42 1/2	40 1/2	2

Lap Weld

2	60	51	2	37	22 1/2
2 1/2	63	54	2 1/2	38	25
3	65	56	3	40	28 1/2
3 1/2	68	59	3 1/2	42	31 1/2
4	70	61	4	44	34 1/2
4 1/2	73	64	4 1/2	46	37 1/2
5	75	66	5	48	40 1/2
5 1/2	78	69	5 1/2	50	43 1/2
6	80	71	6	52	46 1/2
6 1/2	83	74	6 1/2	54	49 1/2
7	85	76	7	56	52 1/2
7 1/2	88	79	7 1/2	58	55 1/2
8	90	81	8	60	58 1/2
8 1/2	93	84	8 1/2	62	61 1/2
9	95	86	9	64	64 1/2
9 1/2	98	89	9 1/2	66	67 1/2
10	100	91	10	68	70 1/2
10 1/2	103	94	10 1/2	70	73 1/2
11	105	96	11	72	76 1/2
11 1/2	108	99	11 1/2	74	79 1/2
12	110	101	12	76	82 1/2

Butt Weld, extra strong, plain ends

1/2	48 1/2	33 1/2	1/2	48 1/2	33 1/2
3/4	51 1/2	36 1/2	3/4	51 1/2	36 1/2
1	54 1/2	39 1/2	1	54 1/2	39 1/2
1 1/4	57 1/2	42 1/2	1 1/4	57 1/2	42 1/2
1 1/2	60 1/2	45 1/2	1 1/2	60 1/2	45 1/2
1 3/4	63 1/2	48 1/2	1 3/4	63 1/2	48 1/2
2	66 1/2	51 1/2	2	66 1/2	51 1/2

Lap Weld, extra strong, plain ends

2	58	50	2	40	26
2 1/2	61	53	2 1/2	42	29
3	64	56	3	44	32
3 1/2	67	59	3 1/2	46	35
4	70	62	4	48	38
4 1/2	73	65	4 1/2	50	41
5	76	68	5	52	44
5 1/2	79	71	5 1/2	54	47
6	82	74	6	56	50
6 1/2	85	77	6 1/2	58	53
7	88	80	7	60	56
7 1/2	91	83	7 1/2	62	59
8	94	86	8	64	62
8 1/2	97	89	8 1/2	66	65
9	100	92	9	68	68
9 1/2	103	95	9 1/2	70	71
10	106	98	10	72	74
10 1/2	109	101	10 1/2	74	77
11	112	104	11	76	80
11 1/2	115	107	11 1/2	78	83
12	118	110	12	80	86

On standard steel pipe an extra 5% off is allowed on sales to consumers while two 5's off apply on sales to jobbers. On less-than-carload shipments prices are determined by adding 20 and 25% and the carload freight rate to the base card. On structural steel pipe the base card is reduced 2 points and two 5's off are allowed

to consumers and three 5's off to jobbers. Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Seamless Steel Commercial Boiler Tubes and Locomotive Tubes

(Net base prices per 100 ft. f.o.b. Pittsburgh, in carload lots)

		Cold	Hot
		Drawn	Roller
1	in. o.d.	13 B.W.G.	\$ 7.62
1 1/4	in. o.d.	13 B.W.G.	10.19
1 1/2	in. o.d.	13 B.W.G.	12.76
1 3/4	in. o.d.	13 B.W.G.	15.33
2	in. o.d.	12 B.W.G.	12.81
2 1/4	in. o.d.	12 B.W.G.	14.35
2 1/2	in. o.d.	12 B.W.G.	16.90
2 3/4	in. o.d.	12 B.W.G.	17.41
3	in. o.d.	12 B.W.G.	19.29
3 1/4	in. o.d.	12 B.W.G.	20.45
3 1/2	in. o.d.	12 B.W.G.	21.45
3 3/4	in. o.d.	10 B.W.G.	41.98
4	in. o.d.	11 B.W.G.	27.49
4 1/4	in. o.d.	10 B.W.G.	29.45
4 1/2	in. o.d.	10 B.W.G.	31.41
4 3/4	in. o.d.	9 B.W.G.	41.98
5	in. o.d.	9 B.W.G.	51.56
6	in. o.d.	7 B.W.G.	79.15

BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List
Machine bolts 70, 10 and 5
Carriage bolts 70, 10 and 5
Lag bolts 70, 10 and 5
Pile bolts, Nos. 1, 2, 3 and 7

heads 70, 10 and 5
Hot-pressed nuts, blank or tapped, square 70, 10 and 5
Hot-pressed nuts, blank or tapped, hexagons 70, 10 and 5
C.p.c. and t. square or hex. nuts, blank or tapped 70, 10 and 5
Semi-finished hexagon nuts, U.S.S. and S.A.E., all sizes to and incl. 1 in. diameter 70, 10 and 5
Larger than 1 in. diameter 70
Stove bolts in packages, Pittsburgh 75
Stove bolts in packages, Chicago 75
Stove bolts in packages, Cleveland 75
Stove bolts in bulk, Pittsburgh 83
Stove bolts in bulk, Chicago 83
Stove bolts in bulk, Cleveland 83
Tire bolts 60 and 5

Large Rivets
(1/2-in. and larger)

Base per 100 Lb.
F.o.b. Pittsburgh or Cleveland \$2.90
F.o.b. Chicago 3.00
F.o.b. Birmingham 3.05

Small Rivets
(7/16-in. and smaller)

Per Cent Off List
F.o.b. Pittsburgh 70 and 5
F.o.b. Cleveland 70 and 5
F.o.b. Chicago and Birm'g'm 70 and 5

Cap and Set Screws

(Freight allowed up to but not exceeding 65c. per 100 lb. on lots of 200 lb. or more)

Per Cent Off List
Milled cap screws, 1 in. dia. and smaller 85 and 10
Milled standard set screws, case hardened, 1 in. dia. and smaller 75 and 10

Milled headless set screws, cut thread 1/2 in. and smaller 75
Upset hex. head cap screws, U.S.S. or S.A.E. thread, 1 in. dia. and smaller 87 1/2
Upset set screw, cut and oval point 80
Milled studs 65 to 65 and 10

Alloy and Stainless Steel

Alloy Steel Ingots

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.
Uncropped \$40 per gross ton

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.

Base price, \$40 a gross ton.

Alloy Steel Bars

Price del'd Detroit is \$52.

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.

Open-hearth grade, base 2.45c.

Delivered price at Detroit is 2.60c.

S.A.E. Differential

Series Numbers \$0.25

2000 (1/2% Nickel) 0.55

2100 (2 1/4% Nickel) 0.55

2200 (3 1/4% Nickel) 1.50

2500 (5% Nickel) 2.25

3100 Nickel Chromium 0.55

3200 Nickel Chromium 1.35

3300 Nickel Chromium 2.30

3400 Nickel Chromium 3.20

4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum) 0.50

4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum) 0.70

4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum) (1.50 to 2.00 Nickel) 1.05

5100 Chromium Steel (0.60 to 0.90 Chromium) 0.35

5100 Chromium Steel (0.80 to 1.10 Chromium) 0.45

5100 Chromium Spring Steel, base 1.35

6100 Chromium Vanadium Bar, 1.20 0.70

6100 Chromium Vanadium Spring Steel 0.70

Chromium Nickel Vanadium 1.50

Carbon Vanadium 0.95

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. The differential for cold-drawn bars 1/2c. per lb. higher with separate extras. Blooms, billets and slabs under 4x4 in. or equivalent are sold on the bar base. Slabs with a section area of 16 in. and 3 1/2 in. thick or over take the billet base. Sections 4x4 in. to 10x10 in. or equivalent carry a gross ton price, which is the net price for bars for the same analysis. Larger sizes carry extras.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 2.95c. base per lb.

STAINLESS STEEL No. 302

(17 to 19% Cr. 7 to 9% Ni. 0.08 to 0.30% C.)

(Base Prices f.o.b. Pittsburgh)

Per Lb.

Forging billets 19.55c.

Rerolling slabs 15c.

Bars 23c.

Plates 26c.

Structural shapes 25c.

Sheets 33c.

Hot-rolled strip 20 1/2c.

Cold-rolled strip 27c.

Drawn wire 23c.

Raw and Semi-Finished Steel

Carbon Steel Rerolling Ingots

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham.
Uncropped \$29 per gross ton

Carbon Steel Forging Ingots

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham.
Uncropped \$31 per gross ton

Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham.

Per Gross Ton

Rerolling \$27.00

Forging quality 35.00

Delivered Detroit

Rerolling \$30.00

Forging Billets Only F.o.b. Duluth 38.00

Rerolling \$29.00

Forging 37.00

Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton

Open-hearth or Bessemer \$28.00

Skelp

F.o.b. Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md.

Per Lb.

Grooved 1.70c.

Universal 1.70c.

Sheared 1.70c.

Tube Rounds

Base per Lb.

F.o.b. Pittsburgh 1.80c.

F.o.b. Chicago 1.85c.

F.o.b. Cleveland 1.85c.

F.o.b. Buffalo 1.90c.

F.o.b. Birmingham 1.95c.

Wire Rods

(Common, base)

Per Gross Ton

F.o.b. Pittsburgh \$38.00

F.o.b. Cleveland 38.00

F.o.b. Chicago 39.00

F.o.b. Anderson, Ind. 39.00

F.o.b. Youngstown 39.00

F.o.b. Worcester, Mass. 40.00

F.o.b. Birmingham 41.00

F.o.b. San Francisco 47.00

F.o.b. Galveston 44.00

Pig Iron and Ferroalloys

PIG IRON

PRICES PER GROSS TON AT BASING POINTS

Basing Points	No. 2 Fdry.	Malleable	Base	Bessemer
Everett, Mass.	\$19.50	\$20.00	\$19.00	\$20.50
Bethlehem, Pa.	19.50	20.00	19.00	20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Swedeland, Pa.	19.50	20.00	19.00	20.50
Steelton, Pa.	19.50	20.00	19.00	20.50
Sparrows Point, Md.	19.50	20.00	19.00	20.50
Neville Island, Pa.	19.50	20.00	19.00	20.50
Sharpsville, Pa.	19.50	20.00	19.00	20.50
Youngstown, Pa.	19.50	20.00	19.00	20.50
Buffalo	19.50	20.00	19.00	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Cleveland	19.50	20.00	19.00	20.50
Toledo, Ohio	19.50	20.00	19.00	20.50
Jackson, Ohio	20.25	20.25	19.75	20.75
Detroit	19.50	20.00	19.00	20.50
Hamilton, Ohio	19.50	20.00	19.00	20.50
Chicago	19.50	20.00	19.00	20.50
Granite City, Ill.	19.50	20.00	19.00	20.50
Duluth, Minn.	19.50	20.00	19.00	20.50
Birmingham	14.50	14.50	13.50	19.00
Provo, Utah	17.50	17.50	17.00	17.00

DELIVERED PRICES PER GROSS TON AT CONSUMING CENTERS

	No. 2 Fdry.	Malleable	Base	Bessemer
Boston Switching District				
From Everett, Mass.	\$20.00	\$20.50	\$19.50	\$21.00
Brooklyn				
From East. Pa.	21.9289	22.4289	21.9289	22.9289
Newark or Jersey City, N. J.				
From East. Pa.	20.9873	21.4873	20.4873	21.9873
Philadelphia				
From Eastern Pa.	20.3132	20.8132	19.8132	21.3132
Cincinnati				
From Hamilton, Ohio	19.5807	19.5807	19.0807	20.0807
Canton, Ohio				
From Cleveland and Youngstown	19.8402	19.8402	19.3402	20.3402
Columbus, Ohio				
From Hamilton, Ohio	20.04	20.04	19.04	19.04
Mansfield, Ohio				
From Cleveland and Toledo	20.3832	20.3832	19.3832	19.3832
Indianapolis				
From Hamilton, Ohio	20.9289	20.9289	19.9289	19.9289
South Bend, Ind.				
From Chicago	20.6935	20.6935	19.6935	19.6935
Milwaukee				
From Chicago	19.57	19.57	18.57	19.57
St. Paul				
From Duluth	20.94	20.94	19.94	19.94
Davenport, Iowa				
From Chicago	20.3832	20.3832	19.3832	19.3832
Kansas City				
From Granite City	21.2178	21.2178	20.2178	20.2178
San Francisco, Los Angeles or Seattle. From Provo	22.315	22.315	21.315	21.315

Delivered prices on Southern iron for shipment to Northern points are 38c. a gross ton below delivered prices from the nearest Northern basing points.

LOW PHOSPHORUS PIG IRON

Basing points: Birdsboro, Pa., Steelton, Pa. and Standish, N. Y. \$23.50

GRAY FORGE PIG IRON

Valley furnace \$18.00

Pittsburgh district furnace 18.00

CHARCOAL PIG IRON

Lake Superior furnace \$21.00

Delivered Chicago 24.2528

Delivered Buffalo 24.595

CANADA

Pig Iron

Per gross ton:

Delivered Toronto

No. 1 fdy., sil. 2.25 to 2.75 \$21.00
No. 2 fdy., sil. 1.75 to 2.25 20.50
Malleable 21.00

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75 \$22.50
No. 2 fdy., sil. 1.75 to 2.25 22.00
Malleable 22.00
Basic 22.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.

Per Gross Ton

Domestic, 80% (carload) \$35.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21% \$26.00
50-ton lots 3-mo. shipment 24.00
F.o.b. New Orleans 26.00

Electric Ferrosilicon

Per Gross Ton Delivered

50% (carloads) \$77.50
50% (ten lots) 85.00
75% (carloads) 128.00
75% (ten lots) 136.00

Silvery Iron

F.o.b. Jackson, Ohio, Furnace

Per Gross Ton	Per Gross Ton
6% \$22.75	12% \$29.25
7% 23.75	13% 30.75
8% 24.75	14% 32.25
9% 25.75	15% 33.75
10% 26.75	16% 35.25
11% 27.75	17% 36.75

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Manganese 2 to 3%, \$1 a ton additional.

For each unit of manganese over 3%, \$1 a ton additional.

Bessemer Ferrosilicon

F.o.b. Jackson, Ohio, Furnace

Per Gross Ton	Per Gross Ton
10% \$27.75	14% \$33.25
11% 28.75	15% 34.75
12% 29.75	16% 36.25
13% 30.75	17% 37.75

Manganese 2 to 3%, \$1 a ton additional. For each unit of manganese over 3%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 ton additional.

Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Other Ferroalloys

Ferrotungsten, per lb. contained W. del., carloads \$1.35 to \$1.45

Ferrotungsten, less carloads, 1.45 to 1.55

Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr. per lb. contained Cr. delivered, in carloads 10.00c.

Ferrochromium, 2% carbon 18.50c. to 17.00c.

Ferrochromium, 1% carbon 17.50c. to 18.00c.

Ferrochromium, 0.10% carbon 19.50c. to 20.00c.

Ferrochromium, 0.06% carbon 20.00c. to 20.50c.

Ferrovanadium, del. per lb. contained V. \$2.70 to \$2.90

Ferrocobalt, 15 to 18% Ti. 6 to 8% C. f.o.b. furnace carload and contract per net ton \$137.50

Ferrophosphorus, electric, or blast furnace material, in carloads, 18% Rockdale, Tenn. base, per gross ton with \$2 unitage 50.00

Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per gross ton with \$2.75 unitage 65.00

Ferromolybdenum, per lb. Mo., del. 95c.

Calcium molybdate, per lb. Mo., del. 80c.

Silico spiegel, per ton, f.o.b. furnace, car lots \$58.00

Ten lots or less per ton 45.50

Silico-manganese, gross ton, delivered: 2.50% carbon grade 90.00

3% carbon grade 95.00

1% carbon grade 105.00

Spot prices \$5 a ton higher

Iron and Steel Scrap

PITTSBURGH

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	\$12.75 to \$13.25
No. 2 heavy melting steel	11.50 to 12.00
No. 2 railroad wrought	12.75 to 13.25
Scrap rails	14.00 to 14.50
Rails, 3 ft. and under	14.50 to 15.00
Compressed sheet steel	12.75 to 13.25
Hand bundled sheet steel	11.50 to 12.00
Hvy. steel axle turnings	10.50 to 11.00
Machine shop turnings	9.50 to 10.00
Short shov. turnings	9.50 to 10.00
Short mixed borings and turnings	7.00 to 7.50
Cast iron borings	7.00 to 7.50
Cast iron car wheels	13.00 to 13.50
Heavy breakable cast	12.25 to 12.75
No. 1 cast	14.00 to 14.50
Rail. knuckles and couplers	15.00 to 15.50
Rail coil and leaf springs	15.00 to 15.50
Rolled steel wheels	15.00 to 15.50
Low phos. billet crops	15.50 to 16.00
Low phos. sheet bar crops	15.00 to 15.50
Low phos. punchings	14.50 to 15.00
Low phos. plate scrap	14.00 to 14.50
Steel car axles	14.50 to 14.75

CHICAGO

Delivered Chicago district consumers:

Per Gross Ton	Per Net Ton
Heavy melting steel	\$12.50 to \$13.00
Automotive hvy. melt steel	11.50 to 12.00
Shoveling steel	12.50 to 13.00
Hydraulic comp. sheets	11.75 to 12.25
Drop forge flashings	9.50 to 10.00
No. 1 busheling	11.00 to 11.50
Rolled car wheels	12.75 to 13.25
Railroad tires	13.25 to 13.75
Railroad leaf springs	12.75 to 13.25
Asile turnings	11.00 to 11.50
Steel couplers and knuckles	13.25 to 13.75
Coil springs	14.25 to 14.75
Asile turnings (elec. fur.)	11.50 to 12.00
Low phos. punchings	14.50 to 15.00
Low phos. plates, 12 in. and under	14.50 to 15.00
Cast iron borings	6.00 to 6.50
Short shoveling turnings	6.75 to 7.25
Machine shop turnings	7.00 to 7.50
Rerolling rails	13.50 to 14.00
Steel rails, less than 3 ft.	13.50 to 14.00
Steel rails, less than 2 ft.	15.00 to 15.50
Angle bars, steel	14.00 to 14.50
Cast iron car wheels	12.75 to 13.25
Railroad malleable	14.75 to 15.25
Agricultural malleable	10.25 to 10.75

PHILADELPHIA

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	\$12.00
No. 2 heavy melting steel	11.00 to 11.25
Hydraulic compressed, new	10.00 to 10.50
Hydraulic compressed, old	8.50 to 9.00
Steel rails for rolling	13.50 to 14.00
Cast iron car wheels	11.50 to 12.00
Heavy breakable cast	10.50 to 11.00
No. 1 cast	11.50 to 12.00
Stove plate (steel work)	8.50 to 9.00
Machine shop turnings	6.50 to 7.00
No. 1 blast furnace	5.00
Heavy axle turnings	9.50 to 10.00
Cast borings	5.00 to 5.50
No. 1 low phos. heavy	13.75 to 14.25
Couplers and knuckles	13.50 to 14.00
Rolled steel wheels	13.50 to 14.00
Steel axles	16.00
Shafting	17.50
No. 1 railroad wrought	11.50 to 12.00
Spec. iron and steel pipe	9.50 to 10.00
Bundled sheets	9.50 to 10.00
No. 1 forge fire	9.50 to 10.00
Cast borings (chem.)	10.50 to 13.00

CINCINNATI

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	\$9.00 to \$9.50
No. 2 heavy melting steel	7.50 to 8.00
Scrap rails for melting	8.75 to 9.25
Loose sheet clippings	8.50 to 8.99
Bundled sheets	6.75 to 7.25
Cast iron borings	5.00 to 5.50
Machine shop turnings	5.25 to 5.75
No. 1 busheling	6.75 to 7.25
No. 2 busheling	3.25 to 3.75
Rails for rolling	9.75 to 10.25
No. 1 locomotive tires	8.00 to 8.50
Short rails	12.50 to 13.00
Cast iron car wheels	9.00 to 9.50
No. 1 machinery cast	10.00 to 10.50
No. 1 railroad east	9.25 to 9.75
Burnt cast	6.75 to 7.25
Stove plate	6.75 to 7.25
Agricultural malleable	8.75 to 9.25
Railroad malleable	10.00 to 10.50

CLEVELAND

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	\$11.75 to \$12.25
No. 2 heavy melting steel	10.75 to 11.25
Compressed sheet steel	10.75 to 11.25
Light bundled sheet stampings	9.25 to 9.75
Drop forge flashings	10.50 to 11.00
Machine shop turnings	7.25 to 7.75
Short shoveling turnings	7.50 to 8.00
No. 1 busheling	10.50 to 11.00
Steel axle turnings	10.50 to 11.00
Low phos. billet crops	15.00 to 15.50
Cast iron borings	7.50 to 8.00
Mixed borings and short turnings	7.50 to 8.00
No. 2 busheling	7.50 to 8.00
No. 1 cast	12.50 to 13.00
Railroad grate bars	7.00 to 7.50
Stove plate	7.50 to 8.00
Rails under 3 ft.	13.00 to 13.50
Rails for rolling	15.50 to 16.00
Railroad malleable	14.50 to 15.00
Cast iron car wheels	10.75 to 11.00

BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:

No. 1 heavy melting steel	\$11.50 to \$12.00
No. 2 heavy melting scrap	10.50 to 11.00
Scrap rails	12.00 to 12.50
New hydraulic comp. sheets	10.50 to 11.00
Old hydraulic comp. sheets	9.50 to 10.00
Drop forge flashings	10.50 to 11.00
No. 1 busheling	10.50 to 11.00
Hvy. steel axle turnings	10.50 to 11.00
Machine shop turnings	5.50 to 6.00
Knuckles and couplers	12.00 to 14.00
Coil and leaf springs	13.00 to 14.00
Rolled steel wheels	13.00 to 14.00
Low phos. billet crops	14.50 to 15.00
Short shov. steel turnings	6.50 to 7.00
Short mixed borings and turnings	6.50 to 7.00
Cast iron borings	6.50 to 7.00
No. 2 busheling	7.00 to 7.50
Steel car axles	12.50 to 13.00
Iron axles	12.50 to 13.00
No. 1 machinery cast	12.00 to 12.50
No. 1 cupola cast	11.50 to 12.00
Stove plate	10.00 to 10.50
Steel rails, 3 ft. and under	14.00 to 14.50
Cast iron car wheels	12.75 to 13.25
Railroad malleable	13.50 to 14.00
Chemical borings	9.00 to 9.50

BOSTON

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	\$9.00 to \$9.25
No. 1 heavy melting steel	7.00 to 7.40
No. 2 steel	7.00 to 7.50
No. 2 steel	8.00 to 8.25
No. 2 steel	6.00 to 6.40
Breakable cast	5.50 to 5.75
Machine shop turnings	3.25 to 3.50
*Machine shop turnings	4.50 to 5.00
Hundred skeleton, long	5.75 to 6.00
Drop flashings	5.75 to 6.00
Shafting	12.00 to 12.50
Steel car axles	12.00 to 12.25
Cast iron borings, chemical	5.50 to 7.00

Per gross ton delivered consumers' yards:

Textile cast	\$9.25 to \$10.00
No. 1 machinery cast	9.50 to 10.00
Stove plate	6.00 to 6.50
Railroad malleable	11.00 to 11.50

* Delivered local army base.

NEW YORK

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	\$8.50 to \$9.00
No. 2 heavy melting steel	7.50 to 8.00
Heavy breakable cast	6.00 to 6.50
No. 1 machinery cast	7.00 to 7.50
No. 2 cast	6.50
Stove plate	6.50
Steel car axles	13.50 to 14.00
Shafting	12.75 to 13.00
No. 1 railroad wrought	7.00 to 7.50
No. 1 yard wrought, long	6.00 to 6.50
Spec. iron and steel pipe	4.50 to 5.00
Forge fire	5.50 to 6.00
Rails for rolling	8.50 to 9.00
Short shoveling turnings	3.00 to 3.25
Machine shop turnings	3.00 to 3.25
Cast borings	3.50 to 3.75
No. 1 blast furnace	2.00 to 2.50
Cast borings (chemical)	11.00 to 11.50
Unprepared yard iron and steel	4.00 to 4.50

Per gross ton, delivered local foundries:

No. 1 machinery cast	\$10.00
No. 1 hvy. cast (cupola)	9.00
No. 2 cast	7.50

* Loading on barge.

BIRMINGHAM

Per gross ton delivered consumers' yards:

Heavy melting steel	\$7.50 to \$8.00
Scrap steel rails	10.00 to 10.50
Short shoveling turnings	7.00
Stove plates	7.00
Steel axles	11.50
Iron axles	11.50
No. 1 railroad wrought	7.00
Rails for rolling	12.50
No. 1 cast	10.00 to 10.50
Tramcar wheels	10.00

ST. LOUIS

Per gross ton delivered consumers' yards:

Selected heavy steel	\$9.25 to \$9.75
No. 1 heavy melting	8.75 to 9.25
No. 2 heavy melting	7.75 to 8.25
No. 1 locomotive tires	9.75 to 10.25
Misc. stand-seg. rails	11.00 to 11.50
Railroad springs	12.00 to 12.50
Bundled sheets	6.00 to 6.50
No. 2 railroad wrought	9.25 to 9.75
No. 1 busheling	5.00 to 5.50
Cast iron borings and shoveling turnings	3.00 to 3.50
Rails for rolling	11.50 to 12.00
Machine shop turnings	2.75 to 3.25
Heavy turnings	5.50 to 6.00
Steel car axles	12.50 to 13.00
Iron car axles	15.00 to 16.00
No. 1 railroad wrought	7.00 to 7.50
Steel rails less than 3 ft.	13.00 to 13.50
Steel angle bars	11.00 to 11.50
Cast iron car wheels	9.00 to 9.50
No. 1 machinery cast	9.00 to 9.50
Railroad malleable	10.75 to 11.25
No. 1 railroad cast	8.50 to 9.00
Stove plate	8.50 to 9.00
Agricult. malleable	8.50 to 9.00

DETROIT

Dealers' buying prices per gross ton:

Heavy melting steel	\$9.50 to \$10.00
Borings and short turnings	5.50 to 6.00

ORES, FLUORSPAR, COKE, FUEL, REFRACTORIES

Lake Superior Ores

Delivered Lower Lake Ports

	Per Gross Ton
Old range, Bessemer, 51.50% iron	..\$4.80
Old range, non-Bessemer, 51.50% iron	4.65
Mesabi, Bessemer, 51.50% iron	.... 4.65
Mesabi, non-Bessemer, 51.50% iron	... 4.50
High phosphorus, 51.50% iron	.... 4.40

Foreign Ore

C.A.F. Philadelphia or Baltimore

	Per Unit
Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algeria	10.50c.
Iron, low phos., Swedish, average 68% iron	10.50c.
Iron, basic or foundry, Swedish, aver. 65% iron	9.50c.
Iron, basic or foundry, Russian, aver. 65% iron	9.50c.
Manganese, Caucasian, washed 52%	26c.
Manganese, African, Indian, 44-48%	22c.
Manganese, African, Indian, 49-51%	24c.
Manganese, Brazilian, 46 to 48%	20c.

Per Net Ton Unit

Tungsten, Chinese, wolframite, duty paid, delivered	\$15.50 to \$16.00
Tungsten, domestic, scheelite, delivered	15.00

Per Gross Ton

Chrome, 45% Cr ₂ O ₃ , lump, c.i.f. Atlantic Seaboard (African)	\$17.50
45 to 46% Cr ₂ O ₃ (Turkish)	\$16.00 to 16.50
48% Cr ₂ O ₃ (African)	20.50
48% min. Cr ₂ O ₃ (Turkish)	19.25
Chrome concentrate, 50% and over Cr ₂ O ₃ , c.i.f. Atlantic Seaboard	22.00
52% Cr ₂ O ₃ (Turkish)	21.75
48 to 49% Cr ₂ O ₃ (Turkish)	19.25

Fluorspar

Per Net Ton

Domestic, washed gravel, 25-5, f.o.b. Kentucky and Illinois mines for all-rail shipment	\$14.00 to \$15.00
Same grade for Ohio River barge shipment for Kentucky and Illinois River landings	14.00 to 15.00
No. 2 lump, 45-5, f.o.b. Kentucky and Illinois mines	14.00 to 15.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	15.50
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2% silicon, f.o.b. Illinois and Kentucky mines	30.00

COKE, COAL AND FUEL OIL

Coke

Per Net Ton

Furnace, f.o.b. Connellsville	\$3.25 to \$3.50
Prompt f.o.b. Connellsville	4.00 to 5.10
Prompt f.o.b. product, Chicago ovens, for delivery outside switching district	8.50
Foundry, by-product, delivered in Chicago switching district	9.25
Foundry, by-product, New England, delivered	11.00
Foundry, by-product, Newark or Jersey City, del'd	9.24 to 9.72
Foundry, by-product, Phila.	9.03
Foundry, by-product, Cleve.	9.25
Foundry, Birmingham	6.50

Long turnings	\$5.25 to \$5.75
No. 1 machinery cast	12.00 to 12.50
Automotive cast	12.00 to 12.50
Hydraulic comp. sheets	10.00 to 10.50
Stove plate	7.50 to 8.00
New factory busheling	8.50 to 9.00
Old No. 2 busheling	5.00 to 5.50
Sheet clippings	6.50 to 7.00
Flashings	8.00 to 8.50
Low phos. plate scrap	10.00 to 10.50

CANADA

Dealers' buying prices per gross ton:

Toronto	Montreal
Heavy melting steel	\$7.00 \$7.00
Rails scrap	8.00 8.00
Machine shop turnings	3.00 3.00
Boiler plate	4.50 4.50
Heavy axle turnings	4.50 4.00
Cast borings	4.00 3.50
Steel borings	2.00 2.00
Wrought pipe	3.50 3.50
Steel axles	7.00 8.00
Axles, wrought iron	7.00 8.00
No. 1 machinery cast	9.00 9.00
Stove plate	5.00 5.00
Standard car wheels	7.25 7.00
Malleable	6.75 7.00

Foundry, by-product, St. Louis, f.o.b. ovens	8.00
Foundry, by-product, del'd St. Louis	9.00
Foundry, from Birmingham, f.o.b. cars docks, Pacific ports	14.75

Coal

Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines	\$1.45 to \$1.65
Mine run coking coal, f.o.b. W. Pa. mines	1.75 to 1.95
Gas coal, 1/2-in., f.o.b. Pa. mines	1.45 to 2.35
Mine run gas coal, f.o.b. Pa. mines	1.75 to 1.95
Steam slack, f.o.b. W. Pa. mines	1.00 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.20 to 1.45

Fuel Oil

Per Gal. f.o.b. Bayonne, N. J.

No. 3 distillate	4.25c.
No. 4 industrial	3.97 1/2c.

Per Gal. f.o.b. Baltimore

No. 3 distillate	4.25c.
No. 4 industrial	3.97 1/2c.

Per Gal. del'd Chicago

No. 3 industrial fuel oil	4.75c.
No. 5 industrial fuel oil	3.75c.

Per Gal. f.o.b. Cleveland

No. 3 distillate	5.25c.
No. 4 industrial	5.13 1/2c.
No. 5 industrial	4.25c.

REFRACTORIES

Fire Clay Brick

Per 1000 f.o.b. Works

High-heat Intermediate	Duty Brick	Duty Brick
Pennsylvania	\$45.00	\$40.00
Maryland	50.00	45.00
New Jersey	50.00	45.00
Ohio	45.00	40.00
Kentucky	45.00	40.00
Missouri	45.00	40.00
Illinois	45.00	40.00
Ground fire clay, per ton	7.00	

Silica Brick

Per 1000 f.o.b. Works

Pennsylvania	\$45.00
Chicago District	54.00
Birmingham	55.00
Silica clay, per net ton	8.00

Chrome Brick

Per Net Ton

Standard, f.o.b. Baltimore, Plymouth Meeting and Chester, Pa.	\$45.00
Chemically bonded f.o.b. Baltimore, Plymouth Meeting and Chester, Pa.	45.00

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Warehouse Prices for Steel Products

PITTSBURGH

	Base per Lb.
Plates	3.15c.
Structural shapes	3.15c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Cold-finished and screw stock:	
Rounds and hexagons	3.20c.
Squares and flats	3.20c.
Hoops and bands under 1/4 in.	3.20c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles	3.30c.
Galv. sheets (No. 24), 25 or more bundles	3.35c.
Hot-rolled sheets (No. 10)	2.95c.
Galv. corrug. sheets (No. 24), per square (more than 3750 lb.)	\$2.69
Spikes, large	2.90c.
Track bolts, all sizes, per 100 count	65 per cent off list.
Machine bolts, 100 count	65 per cent off list.
Carriage bolts, 100 count	65 per cent off list.
Nuts, all styles, 100 count	65 per cent off list.
Large rivets, base per 100 lb.	\$3.50
Wire, black, soft ann't'd, base per 100 lb.	\$2.70
Wire, galv. soft, base per 100 lb.	\$2.925
Common wire nails, per keg	\$2.834
Cement coated nails, per keg	\$2.834

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 9999 lb.

*Delivered in Pittsburgh switching district.

CHICAGO

	Base per Lb.
Plates and structural shapes	3.20c.
Soft steel bars	2.95c.
Cold-fn. steel bars:	
Rounds and hexagons	3.35c.
Plates and squares	3.35c.
Hot-rolled strip	3.30c.
Hot-rolled annealed sheets (No. 24)	3.35c.
Galv. sheets (No. 24)	4.55c.
Hot-rolled sheets (No. 10)	3.05c.
Spikes (keg lots)	3.50c.
Track bolts (keg lots)	4.65c.
Rivets, structural (keg lots)	5.65c.
Rivets, boiler (keg lots)	5.75c.
Machine bolts	*70
Carriage bolts	*70
Lag screws	*70
Hot-pressed nuts, sq. tap or	
Hot-pressed nuts, sq. tap or blank	*70
Hot-pressed nuts, hex. tap or	
Hot-pressed nuts, hex. tap or blank	*70
Hex. head cap screws	87 1/2
Out point set screws	50
Flat head bright wood screws, .50 and 20	
Spring cotter pins	55
Steel bolts in full packages	78
Rd. hd. tank rivets, 7/16 in. and smaller	57 1/2
Wrought washers	\$4.50 off list
Black ann't'd wire per 100 lb.	\$2.85
Com. wire nails, base per keg	2.95†
Cement c't'd nails, base per keg	2.95†

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

*These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 65 per cent off. Discounts applying to country trade are 70 per cent off. f.o.b. Chicago, with full or partial freight allowed up to 50c. per 100 lb.

†Prices for city and suburbs only.

NEW YORK

	Base per Lb.
Plates, 1/4 in. and heavier	3.40c.
Structural shapes	3.37c.
Soft steel bars, small shapes	3.20c.
Iron bars	3.20c.
Iron bars, swed. charcoal	6.75c. to 7.00c.
Cold-fn. shafting and screw stock:	
Rounds and hexagons	3.81c.
Plates and squares	4.31c.
Cold-rolled; strip, soft and quarter hard	3.30c.
Hoops	3.50c.
Bands	3.50c.
Hot-rolled sheet (No. 10)	3.31c.
Hot-rolled ann't'd sheets (No. 24)	3.80c.
Galvanized sheets (No. 24)	4.50c.
Long term sheets (No. 24)	5.20c.
Standard tool steel	11.00c.
Wire, black annealed (No. 10)	3.40c.
Wire, galv. (No. 10)	3.75c.
Tire steel, 1 x 1/4 in. and larger	3.65c.
Open hearth spring steel	4.00c. to 10.00c.
Common wire nails, base per keg	\$3.21
Machine bolts, cut thread:	Off List
All diameters	65 and 10
Carriage bolts, cut thread:	
All diameters	65 and 10

	Per 100 Ft.
Boiler tubes:	
Lap welded, 2-in.	\$18.05
Seamless welded, 2-in.	19.34
Charcoal iron, 2-in.	24.94
Charcoal iron 4-in.	63.65

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

ST. LOUIS

	Base per Lb.
Plates and struc. shapes	3.45c.
Bars, soft steel or iron	3.20c.
Cold-fn. rounds, shafting, screw stocks	3.60c.
Hot-rolled annealed sheets (No. 24)	4.10c.
Galv. sheets (No. 24)	4.65c.
Hot-rolled sheets (No. 10)	3.50c.
Black corrug. sheets (No. 24)	4.10c.
*Galv. corrug. sheets	4.65c.
Structural rivets	4.00c.
Boiler rivets	4.10c.
Per Cent Off List	
Tank rivets, 7/16 in. and smaller	55
Machine and carriage bolts, lag screws, fitting up bolts, bolt ends, plug bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts:	
All quantities	70

*No. 26 and lighter take special prices.

PHILADELPHIA

	Base per Lb.
*Plates, 1/4-in. and heavier	2.98c.
*Structural shapes	2.98c.
*Soft steel bars, small shapes, iron bars (except bands)	2.93c.
*Reinforc. steel bars, sq. twisted and deformed	2.96c.
Cold-finished steel bars	3.61c.
*Steel hoops	3.43c.
*Steel bands, No. 12 and 3/16 in. incl.	3.15c.
Spring steel	5.00c.
*Hot-rolled anneal. sheets (No. 24)	3.65c.
*Galvanized sheets (No. 24)	4.30c.
*Hot-rolled annealed sheets (No. 10)	3.08c.
Diam. pat. floor plates, 1/4 in.	4.95c.
Swedish iron bars	6.25c.

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

*Base prices subject to deduction on orders aggregating 4000 lb. or over.

†For 50 bundles or over.

‡For less than 2000 lb.

CLEVELAND

	Base per Lb.
Plates and struc. shapes	3.31c.
Soft steel bars	2.95c.
Reinforc. steel bars	2.10c.
Cold-finished steel bars	3.25c.
Flat-rolled steel under 1/4 in.	3.36c.
Cold-finished strip	3.00c.
Hot-rolled annealed sheets (No. 24)	3.90c.
Galvanized sheets (No. 24)	4.61c.
Hot-rolled sheets (No. 10)	3.11c.
Hot-rolled 3/16 in. 24 to 48 in. wide sheets	3.56c.
Black ann't'd wire, per 100 lb.	\$2.65
No. 9 galv. wire, per 100 lb.	3.00
Com. wire nails, base per keg	2.40

†Outside delivery 10c. less.

CINCINNATI

	Base per Lb.
Plates and struc. shapes	3.42c.
Bars, soft steel or iron	3.17c.
New billet reforc. bars	3.25c.
Rail steel reforc. bars	3.25c.
Hoops and bands, 3/16 in. and lighter	3.47c.
Cold-finished bars	3.57c.
Hot-rolled annealed sheets (No. 24)	4.02c.
Galv. sheets (No. 24)	4.72c.
Hot-rolled sheets (No. 10)	3.22c.
Structural rivets	4.28c.
Small rivets	55 per cent off list
No. 9 ann't'd wire, per 100 lb. (1000 lb. or over)	\$2.88
Com. wire nails, base per keg:	
Any quantity less than carload	3.04
Cement c't'd nails base 100-lb. keg	3.50
Chain, 1-in. per 100 lb.	8.35
Seamless steel boiler tubes, 2-in.	Not per 100 Ft.
4-in.	48.14
Lap-welded steel boiler tubes, 2-in.	19.35
4-in.	45.30

BUFFALO

	Base per Lb.
Plates	3.35c.
Struc. shapes	3.35c.
Soft steel bars	3.00c.
Reinforcing bars	2.60c.

Cold-fn. flats and sq.	3.40c.
Round and hex	3.40c.
Cold-rolled strip steel	3.19c.
Hot-rolled annealed sheets (No. 24)	4.06c.
Heavy hot-rolled sheets, 3/16 in., 24 to 48 in. wide	3.63c.
Galv. sheets (No. 24)	4.70c.
Bands	2.43c.
Hoops	2.43c.
Heavy hot-rolled sheets	3.15c.
Com. wire nails, base per keg	\$2.95
Black wire, base per 100 lb. (2500-lb. lots or under)	3.55
(Over 2500 lb.)	3.45

BOSTON

	Base per Lb.
Beams, channels, angles, tees, zees	3.54c.
H beams and shapes	3.51c.
Plates—sheered, tank and univ. mill	
1/4 in. thick and heavier	3.56c.
Floor plates, diamond pattern	5.36c.
Bar and bar shapes (mild steel)	2.35c.
Bands 3/16 in. thick and No. 13 ga. incl.	3.65c. to 4.65c.
Half rounds, half ovals, ovals and bevels	4.60c.
Tire steel	4.60c.
Cold-rolled strip steel squares and hexagons	3.90c.
Cold-finished flats	3.75c.
Blue annealed sheets, No. 10 ga.	3.60c.
One pass cold-rolled sheets No. 24 ga.	4.20c.
Galvanized steel sheets, No. 24 ga.	4.90c.
Lead coated sheets, No. 24 ga.	5.55c.

Prices delivered by truck in metropolitan Boston, subject to quantity differentials.

DETROIT

	Base per Lb.
Soft and bars	3.04c.
Structural shapes	3.43c.
Plates	3.43c.
Floor plates	5.17c.
Hot-rolled annealed sheets (No. 24)	3.94c.
Hot-rolled sheets (No. 10)	3.14c.
Galvanized sheets (No. 24)	4.72c.
Bands	3.58c.
Hoops	3.58c.
Cold-finished bars	3.49c.
Cold-rolled strip	3.18c.
Hot-rolled alloy steel (S.A.E. 3100 Series)	5.29c.
Bolts and nuts	70 and 5 per cent off list

Prices delivered by truck in metropolitan Detroit, subject to quantity differentials.

*Price applies to 1,000 lb. and over.

MILWAUKEE

	Base per Lb.
Plates and structural shapes	3.31c.
Soft steel bars	2.96c.
Hot-rolled strip	3.46c.
Hot-rolled sheets (No. 10)	3.16c.
Hot-rolled annealed sheets (No. 24)	3.96c.
Galvanized sheets (No. 24)	4.66c.
Cold-finished steel bars	3.46c.
Cold-rolled strip	3.33c.
Structural rivets (keg lots)	3.56c.
Boiler rivets (keg lots)	3.56c.
Track spikes (keg lots)	3.71c.
Track bolts (keg lots)	4.56c.
Black annealed wire	3.10c.
Com. wire nails	2.90c.
Cement coated nails	2.90c.
Per Cent Off List	
Machine bolts	70 and 10
Carriage bolts	70 and 10
Hot-pressed nuts, sq. and hex. tapped or blank (keg lots)	70 and 10

Prices given above are delivered Milwaukee.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 1500 lb. On cold-finished bars the prices are for orders of 1000 lb. or more of a size.

ST. PAUL

	Base per Lb.
Mild steel bars	3.30c.
Structural shapes	3.45c.
Plates	3.45c.
Cold-finished bars	3.87c.
Bands and hoops	3.55c.
Hot-rolled annealed sheets, No. 24	3.90c.
Galvanized sheets, No. 24	4.50c.
Cold-rolled sheets, No. 20	4.95c.

On mild steel bars, shapes, plates and hoops and bands the base applies on 400 to 14,999 lb. On cold-finished bars, hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over.

BALTIMORE

	Base per Lb.
*Mild steel bars	2.95c.
*Iron bars	2.95c.

*Reinforcing bars	2.95c.
*Structural shapes	3.50c.
*Plates	3.50c.
*Hot-rolled sheet, No. 10	3.10c.
*Hot-rolled annealed sheets, No. 24	3.50c.
*Galvanized sheets, No. 24	4.30c.
*Bands	3.30c.
*Hoops	3.45c.
*Cold-rolled rounds	3.58c.
*Cold-rolled squares, hex. and flats	3.58c.
*Rivets	4.60c.
Bolts and nuts, per cent off list	60 and 10

*Quantity extras per size apply. †Quantity extras per thickness apply. Hot-rolled quantity extras are: 2000 lb. and over, base: 1500 lb. to 1999 lb., add 15c. per 100 lb.; 1000 lb. to 1499 lb., add 30c.; 0 to 999 lb., add 50c.

‡50 bundles and over, base. For 1 to 9 bundles add 50c. per 100 lb.; for 10 to 49 bundles add 25c.

§Base for 1000 lb. and over. For 500 to 999 lb. add 35c. per 100 lb.; for 300 to 499 lb. add 75c.; for 0 to 299 lb. add \$1.25.

CHATTANOOGA

	Base per Lb.
Mild steel bars	3.31c.
Iron bars	3.31c.
Reinforcing bars	3.31c.
Structural shapes	3.56c.
Plates	3.56c.
Hot-rolled sheets, No. 10	3.36c.
Hot-rolled annealed sheets, No. 24	4.31c.
Galvanized sheets, No. 24	4.66c.
Steel bands	3.61c.
Cold-finished bars	3.96c.

MEMPHIS

	Base per Lb.
Mild steel bars	3.42c.
Shapes, bar size	3.42c.
Iron bars	3.42c.
Structural shapes	3.67c.
Plates	3.67c.
Hot-rolled sheets, No. 10	3.47c.
Hot-rolled annealed sheets, No. 24	4.27c.
Galvanized sheets, No. 24	4.97c.
Steel bands	3.72c.
Cold-drawn rounds	3.89c.
Cold-drawn flats, squares, hexagons	5.89c.
Structural rivets	4.25c.
Bolts and nuts, per cent off list	65
Small rivets, per cent off list	50

NEW ORLEANS

	Base per Lb.
Mild steel bars	3.30c.
Reinforcing bars	3.50c.
Structural shapes	2.55c.
Plates	3.55c.
Hot-rolled sheets, No. 10	3.55c.
Hot-rolled annealed sheets, No. 24	4.50c.
Galvanized sheets, No. 24	4.95c.
Steel bands	3.95c.
Cold-finished steel bars	4.15c.
Structural rivets	4.25c.
Boiler rivets	4.25c.
Common wire nails, base per keg	\$2.10
Bolts and nuts, per cent off list	70

PACIFIC COAST

	Base per Lb.
San Fran- Los	
cisco Angeles Seattle	
Plates, tank and	
U. M.	3.55c. 3.60c. 3.55c.
Shapes, standard	3.55c. 3.60c. 3.55c.
Soft steel bars	3.60c. 3.60c. 3.60c.
Reinforcing bars	
f.a.b. cars deck	
Pacific ports	2.45c. 2.45c. 2.45c.
Hot-rolled annealed sheets (No. 24)	4.60c. 4.35c. 4.60c.
Hot-rolled sheets (No. 10)	3.75c. 3.70c. 3.75c.
Galv. sheets (No. 24)	5.00c. 4.95c. 5.00c.
Cold finished steel:	
Rounds	5.95c. 5.85c. 6.00c.
Squares and hexagons	7.20c. 7.10c. 7.25c.
Flats	7.70c. 7.60c. 8.25c.
Common wire nails	
base per keg	
less carload	\$3.30 \$3.40 \$3.30

All items subject to differentials for quantity.

TOOL STEEL

Prices are same for warehouse distribution at all points on or East of Mississippi River. West of Mississippi quotations are 1c. a lb. higher.

	Base per Lb.
High speed	57c.
High carbon chrome	57c.
Oil hardening	55c.
Extra	17c.
Regular	14c.

OBITUARY

B. H. JOHNSON, who last week was reelected to serve a second term as vice-president of the American Foundrymen's Association, died of pneumonia in Toronto on Aug. 27. He was identified with the R. D. Wood Co., Philadelphia, as assistant to the president. Mr. Johnson was born in Lynn, Mass., and received his technical education at the Massachusetts Institute of Technology. After graduation he joined Taylor & Goding, engineers and machinists. When that company consolidated with the John T. Robinson Co., Mr. John-



B. H. JOHNSON

son was made superintendent. In 1910 he became connected with the Cresson-Morris Co., Philadelphia, as works manager and remained with that company for over 15 years. Mr. Johnson was active in the foundrymen's association, having served for many years on technical committees. He was one of the organizers of the Gray Iron Institute, which he served as president in 1931.

PETER J. KRENTZ, vice-president and works manager of the Buffalo Foundry & Machine Co., Buffalo, died of heart disease at his home in that city on Aug. 16, aged 64 years. He became identified with the company in 1903, in charge of the pattern department, and was made superintendent in 1906. He was promoted to the works managership during the World War and became vice-president in 1923.

EDMUND D. BRIGHAM, vice-president of the North American Car Corp., Chicago, died Aug. 20 from a heart attack. He was 51 years old.

FRANCIS M. BARTON, president of the former Barton Spiderweb System, Chicago, dealer in reinforcing bars, died Aug. 22. Mr. Barton was formerly Illinois State architect and at one time he operated a mill in which he produced rail steel reinforcing bars.

HUBERT F. HANKS, manager of sales, steel and wire products, Pittsburgh Steel Co., Pittsburgh, died at Pittsburgh on Aug. 23. He was born in Laurinburg, N. C., on March 21, 1888, and had been employed by the Pittsburgh concern since 1909. From 1920 to 1930 he had been manager of the company's fence department.

JAY H. HALL, assistant chief engineer, Electric Controller & Mfg. Co., Cleveland, died on Aug. 21 in Morgantown, N. C., while on a vacation trip. He became connected with the company more than 30 years ago soon after his graduation from Rose Polytechnic College and, with the exception of a brief period, had been affiliated with it since that time.

ARTHUR F. WILLIAMS, president of the Williams Patent Crusher & Pulverizer Co., manufacturer of machines for crushing and pulverizing stone, coal, feed and fertilizers, St. Louis, died there Aug. 21 after a lingering illness. He was 55 years old. Mr. Williams had been president for 12 years of the company which was founded in 1897 by his father, the late Milton F. Williams.

HARRY E. STITT, formerly chief engineer and recently consulting engineer, Austin Co., Cleveland, died Aug. 23, aged 58 years. He played an important part in developing standardized unit construction designs for factory buildings, while a member of the Austin organization. Mr. Stitt was born in Blairsville, Pa., in 1877, and was graduated in civil engineering from Pennsylvania State College in 1903. He was employed successively by Heyl & Patterson, Pittsburgh, Jones & Laughlin Steel Corp., and the Carnegie Steel Co. in Youngstown. Later he became affiliated with Arthur G. McKee & Co., and Anton Burchard, engineers in Cleveland. He became associated with the Austin Co. in 1914 and was chief engineer of that company until a few months ago when poor health made it necessary for him to lighten his responsibilities.

DON M. OSBORNE, formerly engaged as a machine tool dealer in Cleveland under the name of the D. M. Osborne Machinery Co., died in that city Aug. 23, aged 67 years. He retired several years ago and for the past eight years had resided

in Los Angeles, being on a visit in Cleveland at the time of his death.

JAMES Y. ANTHONY, a member of the tack manufacturing firm of Anthony & Cushman, Taunton, Mass., died on Aug. 17 at Los Angeles.

ROBERT LOUIS SMITH, general manager of Baxter D. Whitney & Son, machine works, Winchendon, Mass., died on Aug. 19 at his home in that town, after a long illness. He was born in Jamaica Plain, Mass., Sept. 18, 1887.

RODMAN PAUL SNELLING, vice-president and director of the Saco-Lowell Shops, died at his summer home in Beverly Farms, Mass., on Aug. 15. Mr. Snelling was a leader in the development of the textile industry and was widely known in the iron and steel trade. He was born in Jamaica Plain, Mass., and was graduated from Harvard in 1881.

JOSEPH F. FAY, president of the iron and steel firm of Fay Brothers Co., Cambridge, Mass., died at Marshfield, Mass., on Aug. 12, aged 69 years.

Memorial to Steel Master Unveiled

AS a memorial to the late John Morewood Jones, who at the time of his death, Nov. 1, 1927, was chairman of the board and president of the Eastern Rolling Mill Co., Baltimore, a tablet was recently unveiled at the Welsh Home for Aged Folks, Rocky River, Ohio, by Lewis J. Jones, of Atlantic City, a former business associate of J. M. Jones. The memorial was placed in recognition of a gift of \$10,000 to the Welsh home. Another gift of \$10,000 has been paid by the late Mr. Jones' estate, one-third of which was turned over to the Welsh home at Scranton, Pa., and the remainder to the Community Fund of Baltimore. These gifts were paid following the death of Mr. Jones' widow some time ago.

Correction

"Recent Developments in the Metal Cutting Tool and Gage Field" is the title of the address by A. H. d'Arcambal, consulting metallurgist, Pratt & Whitney Co., at the session of the Machine Tool Congress to be held under the direction of the American Society of Tool Engineers, at Cleveland, on the evening of Sept. 13. The title given on page 32 of THE IRON AGE of Aug. 22, namely "Latest Developments in Metal Cutting and Gage Steels" is incorrect.

Eastern Pennsylvania Rate Again Advances



Output Is Now 38 Per Cent—Additional Price Changes Announced—Bookings Improve—Scrap Strong

PHILADELPHIA, Aug. 27.—Even though the tonnage available in this area seems considerably smaller than in districts farther west, orders show a steady increase. Warehouses and jobbers are buying more freely, autobody stamping plants have entered sizable commitments for September consumption, a local shipbuilder is releasing heavy plate orders, and radio and stove makers and miscellaneous users are placing more steel.

For some time mills have protested against the consumer practice of ordering small quantities for overnight shipment. This has thrown a burden on the mills and has tended to increase the unit cost of steel. Consequently the price changes which recently have been made and are being considered are mostly to the end of penalizing this spot ordering and of giving the advantage to consumers who buy larger quantities for forward delivery. The new merchant wire schedule specifies a price related to the size of the order. Also, the new

galvanized sheet price schedule will probably follow the same trend, and similar changes may be made in black and blue-annealed sheets.

Alan Wood is temporarily operating three furnaces, Pencoyd also is operating three furnaces, and the Harrisburg producer has three furnaces on for the first time in many months. Operations in other smaller district mills are about the same as last week, and Bethlehem reports additional activity at Sparrows Point. Consequently the district rate is two points higher at 38 per cent of capacity.

Pig Iron

District foundries are melting in increased volume and pig iron sales are consequently heavier than a month ago. Fourth quarter books have not been formally opened, but sellers are canvassing their trade in order to line up contracts. So far, only a few foundries have shown a willingness to order more than a month ahead, and this practice will probably continue unless price changes are made or some

form of differential rates is inaugurated.

Sheets and Strip

The 25c. per 100 lb. drawing extra has for some time been practically ignored in this area, and mills are now publicly quoting full-finished material with the drawing extra waived. Very deep drawing enameling sheets still retain the extra in most cases. A price change on galvanized material is in the offing, aimed mostly at jobbers in order to drive small tonnages from the mills into warehouses. Jobbers of galvanized sheets have been receiving \$2 a ton concession, but mills plan to supplant this with some quantity differential set-up in order to bring their prices more in line with warehouse prices. Therefore, buyers of small lots will find it more advantageous to purchase locally rather than ask for quick shipment on small quantities from distant mills. Jobbers without warehouse facilities are already complaining about this proposed change.

Local autobody stamping plants have bought about three-quarters of their estimated September sheet requirements, and expect to make additional purchases during the next fortnight. Budd Mfg. Co. now has one press stamping out Chevrolet frames and expects to have the other press operating within a few days. Alan Wood has commenced delivery on steel for these frames, and Budd expects a September production of about 15,000 frames. Strip sales have latterly shown signs of improvement, with orders coming in from radio and stove makers, and from a wide variety of miscellaneous consuming outlets. Jobbers are buying more freely, particularly in the Baltimore area.

Bars, Plates and Shapes

The major portion of the 1000-ton requirements of the Virginia ferryboat has been purchased by Sun Shipbuilding & Drydock Co. This same company expects to release orders soon on the two Gulf Oil Co. tankers, which will require a total of 8000 tons of bars, plates and shapes. A. B. Rote & Co. will furnish 100 tons of shapes for a Masonic building at Harrisburg, Pa., Lehigh Structural Steel Co. was awarded 1000 tons for the Wilmington, Del., post office, Anthracite Bridge Co. secured 630 tons for a warehouse at Scranton, Pa., Weatherly Steel Co. was awarded 430 tons for a lace mill at Wilkes-Barre, Pa., and Shoemaker Bridge Co. has been awarded 100 tons for a bridge at Pottstown, Pa. The Chester, Pa., post office, requiring 150 tons of shapes, is up again for bidding on Sept.

Results Are What Count

If you want real economy—look to results rather than to first cost. It is on this basis that "HERCULES" (Red-Strand) Wire Rope continues to make and hold friends. There are reasons, of course, why this wire rope is so dependable and long lasting, and we are always glad to give full details to everyone interested in saving money. Made in a wide range of constructions including Round Strand, Flattened Strand, Preformed, Non-Rotating and Steel Clad types.



MADE ONLY BY

A. Leschen & Sons Rope Co.

ESTABLISHED 1857

5909 Kennerly Avenue, St. Louis, Mo.

NEW YORK—CHICAGO—DENVER—SAN FRANCISCO

23, a highway bridge at Bridgeton, N. J., will close on Sept. 9 and calls for 300 tons, general contract bids go in today on 350 tons for the Reading, Pa., high school, and McCloskey & Co. expect to release 2300 tons soon for the archives building at Washington. The major active reinforcing steel project calls for 750 tons for a reservoir at Reading, Pa., on which Y. E. O. Construction Co., Philadelphia, has the general contract.

Imports

The following iron and steel imports were received here this week: 100 tons of manganese ore from British India, and 35 tons of steel tubes, 10 tons of steel forgings and 3 tons of steel bars from Sweden.

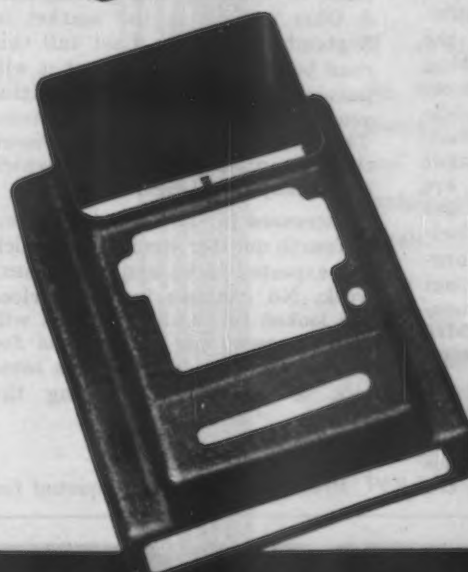
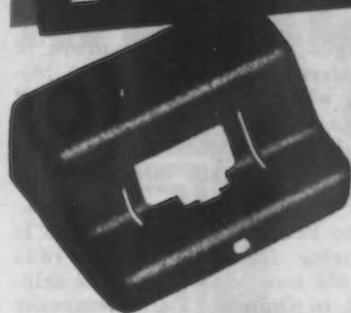
Scrap

One broker is now paying \$12 a ton for No. 1 steel to cover a recent \$12 mill sale in eastern Pennsylvania. Brokers are also freely paying \$11 for No. 2 steel for coverage on old contracts, and this grade is consequently quoted at \$11 to \$11.25 with the probability that no mill could secure a tonnage under \$11.50. No new mill sales were made during the week, but brokers insist that present melting schedules will necessitate new buying in sizable volume within the next month. Consequently they are holding strongly to their bullish position on the basis of potential domestic demand, and point to revived export interest as an additional strengthening factor. It is expected that truck deliveries of automobile scrap from Virginia will develop in a month or so, following a seasonal decline in produce shipping. Last year about 600 tons weekly came into this market in this manner. However, the Baltimore market is currently more active, and the steel may be dropped off there instead of coming this far north.

Trend Still Upward At St. Louis

ST. LOUIS, Aug. 27.—Higher prices which have prevailed in this market the last few weeks have brought out "frozen" scrap, and, following the recent buying in this district, the market is said to be nearing the top for the present. The mills are said to be well fortified with scrap. Foundry grades have taken a spurt, railroad malleable being 25c. a ton higher. Steel angle bars, No. 1 machinery cast and No. 1 railroad cast have advanced 50c. a ton, and cast iron carwheels, \$1. Railroad lists, which are light, include 10 carloads advertised by the St. Louis South-

PRECISION in PRESSED STEEL



This pressed steel cash register case—designed by Transue & Williams engineers—is an excellent example of the accuracy to fine detail we are able to procure in regular stamping production.

Note the depth in these two sections—each pressed from a single sheet. And observe the many slots, holes and ridges that must fit accurately when the case is placed over the assembly of the machine.

It is good practice to consult Transue & Williams FIRST for ideas on stamping design.

TRANSUE & WILLIAMS
ALLIANCE, OHIO
DESIGNERS & MAKERS OF DEEP DRAWN
STAMPINGS

western and 15 carloads offered by the Missouri Pacific.

The melt of pig iron in the district continues to increase. The stove industries in the Belleville section are crowding as heavy production as they can into their four-day work schedule, and the jobbing foundries report that business is steadily improving. Buying continues to be for immediate needs, and this situation is expected to continue until books are open for fourth quarter, when substantial bookings are expected.

Business in finished steel is reported to be slightly improved, the bookings being quite diversified, including virtually every item except structural steel, in which interest is comparatively light. Highway projects in Missouri and Illinois are awaiting a definite statement as to the availability of additional Government money. The general contract for dormitories at the Algoa State Farm, requiring 130 tons of structural steel, has been awarded to Simon Construction Co., Columbia, Mo.

Automotive Demand Improves at Cleveland



Ingot Rate, However, Remains Unchanged—Advance in Pig Iron Prices Regarded as a Possibility—Scrap Prices Again Advance

CLEVELAND, Aug. 27.—Ingot output in the Cleveland-Lorain territory is unchanged this week at 43 per cent of capacity. Demand for finished steel has taken a slight upturn as a result of new releases for bars and sheets from automobile manufacturers and parts makers and an increase in miscellaneous orders. Releases against orders recently entered for forgings for new models of automobiles have started to reach the forge shops, and some jobbing stamping plants have secured releases for stamped automobile parts. New business from automobile manufacturers is rather spotty, but substantial orders are expected as soon as makers get ready for good production schedules. The \$3 a ton advance on forging billets is expected to bring out considerable business in September from consumers having third quarter contracts at the old price.

The new prices on wire products have gone into effect, giving buyers under contract the benefit of the reduction. With new schedules based on quantity differentials the

changes apparently will prove of considerable disadvantage to jobbers who do a small volume of business but who as qualified jobbers have heretofore bought at the same prices as the larger jobbing interests.

The Pere Marquette Railroad is inquiring for 1700 tons of rails and 550 tons of tie plates for shipment to Ontario. The Chesapeake & Ohio will be in the market in September for rails. Last fall this road bought 35,000 tons, but it will purchase a smaller quantity this year, probably around 25,000 tons. The C. & O. has not yet purchased the 100 automobile cars for which it recently took bids.

Increased interest is being shown in fourth quarter steel prices which are expected to be announced next week. No changes in base prices are looked for. Lake furnaces will name present pig iron prices for the last quarter, but there is some talk of an advance during the quarter.

Pig Iron

Present prices will be quoted for

the fourth quarter when Lake furnaces open their books Sept. 1, and considerable contracting is expected for that delivery. The recent gain in melt has caused some talk of a price advance during the coming quarter should furnaces accumulate a good backlog in orders at the start of the quarter. Some large consumers have indicated that they may cover for good tonnages soon after fourth quarter sales start. As an argument in favor of higher prices it is pointed out that furnaces have absorbed the increased production costs due to the emergency freight surcharge placed in effect last May and costs are expected to be further increased by an advance in fuel prices caused by the passage of the Guffey coal bill. August shipments will exceed those in July by about 30 per cent. Small lot buying continues in fair volume, one producer selling 4000 tons during the week. Shipments to automotive foundries, which have been slack for some time, have started to pick up slightly.

Bars, Plates and Shapes

Demand for merchant bars has increased, largely from forging shops for automobile work. Structural shapes are in fair demand from fabricators for recently placed construction jobs. Reports indicate that fabricating prices, which have been weak, are slightly firmer. New inquiry for construction work involving shapes and reinforcing bars is very light. These activities in Ohio so far have not benefited from distribution of Federal work relief funds. A bridge in Huntington, W. Va., taking 370 tons of structural shapes, has been awarded to the Mount Vernon Bridge Co., and will also take 125 tons of reinforcing bars. For the administration building for the Easterly sewage disposal plant at Cleveland 300 tons of reinforcing bars has been awarded to the Patterson-Leitch Co., and 160 tons of fabricated material has been placed with the McClintic-Marshall Corp. The Kalman Steel Corp. has taken 125 tons of bars for a building for the Elwell-Parker Electric Co., Cleveland.

Sheets

Unevenness characterizes the demand from the automotive industry. Some of the motor car manufacturers have issued releases for sheets for new models, but others are not yet taking steel against recently placed orders. New purchases of large tonnages are expected from automobile manufacturers within 30 days. Stamping companies in this territory have received some releases for parts for new automobile models and are ordering somewhat more freely

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than recently. Miscellaneous demand is good.

Strip Steel

Demand from automotive sources is light. This is due in part to the holding up of shipments by some of the General Motors parts plants, which will resume operations Aug. 29 and are expected to issue releases more liberally than before the vacation shut-down.

Scrap

Although no new sales to consumers were made during the week, the market continues very firm and prices on heavy melting steel and compressed sheet steel have advanced 25c. a ton. Dealers are paying \$13.50 for No. 1 steel for Youngstown delivery against recent \$14 orders and \$12.50 to \$13 for No. 2. However, Lorain is the best outside market at present for heavy melting steel produced in Cleveland, this material bringing \$12.50 to \$13 from dealers for Lorain delivery.

Cast Iron Pipe

Fitchburg, Mass., has awarded 150 tons of 8 to 12-in. to Warren Foundry & Pipe Corp.

Chicago will take bids Aug. 30 on 100 12-ft. lengths of 20-in. and 200 12-ft. lengths of 24-in. pipe.

Waldo, Wis., has applied for Federal aid to build \$22,000 waterworks plant. Robert Cramer, 647 West Virginia Street, Milwaukee, is consulting engineer.

Compton, Cal., will soon take bids for 13,000 ft. of 4 and 6-in. for water lines. A. B. Gidley is city manager.

Huntsville, Ala., plans about 10,000 ft. of various sizes for new water line from eastern section of city to Monte Sano.

General Purchasing Officer, Panama Canal, Washington, asks bids until Sept. 5 for 19,000 ft. of cast iron soil pipe and 1600 bends (Schedule 3083).

Panama City, Fla., plans water pipe lines. Fund of \$76,600 is being arranged through Federal aid for this and other waterworks installation.

Albion, Neb., plans pipe lines for water system. Fund of \$17,875 is being secured through Federal aid for this and other waterworks improvements. Henningson Engineering Co., Union State Bank Building, Omaha, Neb., is consulting engineer.

Binghamton, N. Y., plans about 10,700 ft. of 12 and 20-in. for main water supply, replacing lines damaged by recent flood. Entire project will cost about \$140,000. Financing is being arranged through Federal aid. J. A. Giles, City Hall, is city engineer.

Appleton, Wis., asks bids until Sept. 3 for 4720 ft. of 4, 6, 8 and 12-in. centrifugal or equal for water system. A. E. Dimick is secretary of Appleton Water Commission.

Sparta, Ill., has awarded contract for waterworks improvements, including 265,000 gal. pump, to A. P. Poirot, Belleville, Ill., for \$21,650, subject to approval of PWA.

Dover, Minn., plans pipe lines for water supply. Fund of \$25,000 is being arranged for this and other waterworks installation. Ealy G. Briggs, 1957 University Avenue, St. Paul, Minn., is consulting engineer.

Lynchburg, Va., plans 36-in. pipe line for Pedlar Aqueduct water supply to city, more than 11 miles, including line under James River, replacing present wooden pipe lines. Fund of \$619,000 is being arranged through Federal aid.

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Pleasant Hill, Ill., plans pipe lines for water system. Fund of \$48,600 is being arranged through Federal aid for this and other waterworks installation. Beard Engineering Co., 44 South Central Avenue, Clayton, Ill., is consulting engineer.

Enid, Okla., has called special election Sept. 6 to approve bonds for \$725,000 of total fund of \$1,222,000 for waterworks extensions and improvements, including about 26,400 ft. 16 and 18-in. in northwest district, and about 55,340 ft. larger pipe for new main trunk line to city from Turkey Creek, at point near Laboma, where new dam will be built. Project will include steel storage tank, filtration plant, pumping stations and other construction. C. H. Guernsey, Cherokee, Okla., is consulting engineer.

Watford City, N. D., plans pipe lines for water supply; also 75,000-gal. elevated steel tank, pumping station and other

equipment. Fund of \$40,000 has been arranged through Federal aid. G. H. Bugenhagen, First Avenue Building, Minot, N. D., is consulting engineer.

Heber City, Cal., has placed 256 tons of 16-in. with Pacific States Cast Iron Pipe Co.

Portland, Ore., has awarded 125 tons of 6 and 8-in. to National Cast Iron Pipe Co.

Torrance, Cal., is preparing plans for water system improvements which will involve 600 tons.

Victor, Idaho, will take bids soon on about 200 tons of 4 and 6-in.

Victorville, Cal., has had a loan approved for water system improvements and will soon purchase 351 tons of 4 and 6-in.

Demand Recedes in New York Area



Loss in Tin Plate Tonnage Is Not
Offset by Gains in Other Products—
Federal Rules for Road Allotments
May Be Liberalized

NEW YORK, Aug. 27.—Tin plate bookings continue to recede and there has not been enough expansion in demand from other sources to offset this loss. Railroad buying continues to lag, although the New York Central will take bids on Sept. 4 on 4900 tons of rails for immediate shipment, together with an option on 2900 tons for delivery in December. At the same time it will take figures on necessary accessories.

Construction work also is moving ahead much more slowly than had been expected. Highway and grade elimination programs have failed to get under way, largely because States have been unable or unwilling to supplement allotments from the Federal Government. For this reason it is expected that the Bureau of Public Roads will soon liberalize the present limit of \$1,400 per man on Federal allotments for these projects. So far Michigan is the only State for which a definite road and grade separation program has been authorized, but it is expected that with the raising of the Federal limit on allotments per man-year other State programs can be gotten under way.

Bids are being taken today at Washington on the Bronx post office, requiring 2300 tons of steel. Tenders are expected to be taken soon on a section of the West Side highway, New York, from Forty-eighth to Fifty-fourth Streets, requiring 8000 to 10,000 tons of steel.

Demolition work has been begun on the right-of-way for the new East River drive to extend from the Battery to 125th Street, in Manhattan. Application has been made for Federal funds to the extent of \$1,237,000 for the first section of the drive, and about one-third of the sum is said to be now available. This highway will not be elevated, but will involve numerous underpasses and overpasses.

The Texas Co. has started work on two new refineries at Port Arthur, Tex., to cost \$3,000,000. Improvements will include a number of heavy stills, calling for a round tonnage of plates.

Consideration is now being given to the revision of quantity extras on sheets, as well as to the elimination of the \$2-a-ton discount on galvanized sheets to jobbers.

Pig Iron

With sales now confined to September delivery, total bookings during the past week amounted to only 1250 tons, as compared with 2250 tons in the preceding week and 2800 tons sold a fortnight ago. Some furnace representatives are asking their customers to estimate their fourth quarter demands, although actual commitments will not be made until Sept. 1. The general opinion of the trade is that demands during the last quarter will be much better than for the current quarter.

Reinforcing Steel

Bookings of miscellaneous small lots are only in moderate volume, but the outlook for larger awards is more promising as States call for bids on highway projects. Prices are none too firm, with secondary sellers shading bending extras and other charges. George H. Flynn will soon place the 750 tons for the Wards Island project, and Woodcrest Construction Co. expects an early award of the 2000 tons required for the approach to the Triborough Bridge. New projects include a New York State letting on Sept. 4 covering 1700 tons of bars and mesh, and a letting on Sept. 11 which will cover 1200 tons of bars and mesh. New Jersey is expected to come into the market next month, and Rhode Island will soon expand its road building program.

Scrap

The strong tone of outside markets has finally influenced brokers' prices here. No. 1 and No. 2 steels are bringing \$9 and \$8 a ton respectively in Jersey City for eastern Pennsylvania delivery. Barge loadings in the immediate New York area, however, are still going forward at \$8.50 and \$7.50 for No. 1 and No. 2 respectively, for truck lots alongside barges. Occasionally 25c. a ton more can be secured. Most dealers and even large sellers, such as railroads and fabricating plants, are withholding supplies from brokers in anticipation of higher bids. But even higher broker prices have failed to draw out any sizable quantities of scrap. The United States Torpedo Station at Newport, R. I., is offering 325 tons of turnings for sale on Sept. 5. Brokers here are still delivering on the heavy English orders placed a few months ago. Italy is meeting her obligations more promptly and has already paid for 88 per cent of the scrap shipped prior to the middle of August, according to a recent Government report. Brokers are still

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demanding cash payment, and report that small additional tonnages have been sold recently. Mitsui & Co. state that Japan will not be in the market before late October.

Railroad Equipment

Cambria & Indiana will soon award contract for body repairs to 250 to 1000 hopper cars.

Seaboard Air Line has ordered two streamlined baggage and mail, oil-electric rail motor cars from Electro-Motive Corp. and St. Louis Car Co.

Canadian Pacific has bought 700 40-ton steel-sheathed box cars from Canadian Car & Foundry Co. and 250 40-ton freight-type refrigerator cars, 100 50 ton hopper cars, 170 75-ton composite high-side drop-bottom gondola cars from National Steel Car Co.

Canadian National has ordered 250 automobile cars and 80 sand cars from Canadian Car & Foundry Co.; 150 automobile cars and eight snow plows from National Steel Car Co., 200 refrigerator cars and 250 gondola cars from Eastern Car Co., and will build 250 refrigerator cars in its own shops. It has also bought five 4-8-4 types U-2-D locomotives and five 4-8-4 type U-4-A locomotives from Montreal Locomotive Works; and five 2-8-2 type A-4-B locomotives from Canadian Locomotive Works.

Grand Trunk Western has placed an order for bearings and boxes to equip engine trucks of three of their existing class U-3-A steam locomotives with Timken Roller Bearing Co.

RAILS AND TRACK SUPPLIES

Pere Marquette is inquiring for 1700 tons of rails, 119,450, or 550 tons, of tie plates and 450 lag screws.


New Composite Stainless Steel Bar Stock

THE Jessop Steel Co., Washington, Pa., has recently developed a new composite stainless steel bar stock known as Silverbond (patents for which are pending), for use in any application where the surface of the bar must have corrosion and temperature-resistant properties.

The product is described as being a web-like structure in which low-carbon, inexpensive inserts to the extent of approximately 40 per cent are mechanically held, as well as welded by pressure applied at high temperatures, so that there is no possibility of separation of the component parts. The cladding can be varied from 10 per cent to 25 per cent, dependent upon the application.

Stock is made in rounds, flats, octagons, hexagons, sheets, strips and other shapes to meet special requirements. It is now being used in the manufacture of refrigerator trays and accessories, shaftings where machining is not required, and architectural and general decorative trim.

The insert of the less costly metal reduces the cost of the bar, and, in some cases, is considered to be an advantage in forming and fabricating due to its added ductility.



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Y Valves: 3/4", 1", 1 1/2", 2", 3", 4", 6", 8".
P.R. Valves: 1", 1 1/2", 2", 3", 4".
Duriron-Nordstrom Valves: 1", 1 1/2", 2", 2 1/2", 3", 4", 6".

Send for Bulletin 161 for more complete information

THE DURIRON COMPANY, Inc.
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PWA Projects Encounter Obstacle

WASHINGTON, Aug. 27.—A majority of the larger PWA projects proposed under the new construction program may have to be abandoned, it was indicated today by Administrator Ickes, as the result of the Presidential order that all applications under the works-relief fund be filed by Sept. 12, with Dec. 15 set as the deadline for contract awards. Ickes said it would be difficult to get construction projects going under the new arrangement. Mention was made of the difficulty of drawing up specifications for construction jobs in time to come within the deadline. It was stated that most municipalities require a month or six weeks

after bids have been submitted before making awards. The difficulty of starting construction in mid-winter also was pointed out. Ickes said he thought slum clearance and low-cost housing projects would be excepted from the order.

Speculation is rife as to the duties that will be assumed by B. F. Fairless with the United States Steel Corp. when he joins that organization Sept. 15, the date that his resignation as executive vice-president of the Republic Steel Corp. becomes effective. No announcement has been forthcoming from the steel corporation and the commonest surmise is that Mr. Fairless will be assigned to a program of consolidating various subsidiary operating organizations, as well as amalgamating sales forces.

Zinc Sales Total 4000 Tons—Lead Price Advances on Good Buying

Straits Tin Gradually Declines as Domestic Users Ignore Market—Copper
Very Firm and in Moderate Demand

NEW YORK, Aug. 27.—It has been reported that certain electrolytic copper interests have been in favor of advancing the price another 25 points to a 9c., valley, level. However, equally strong sellers prevented this move by opening books freely at the newly established 8.50c. level. This lower price appears very firm and users are generally in a sufficiently well covered position to discourage any immediate move to raise the price structure. Nevertheless, copper users apparently are none too sure of the situation and continue to come into the market for additional commitments despite the heavy purchases which were made

during the past fortnight. August sales to date total about 120,000 tons.

Domestic sellers continue to watch developments abroad with considerable interest. The price there still is slowly rising and approaching the domestic level, and it is quite possible that it may advance beyond its present 8.35c. position to a point above the American price. Such a movement would tend to force prices up here again.

Zinc

Many buyers covered their estimated September requirements a

week ago at the 4.50c. price level. However, quite a sizable amount of new business, amounting to 4450 tons, came into the market during the past week on a 4.60c. price basis for late October and early September delivery. With 39,000 tons of spelter sold forward for future delivery, the trade is inclined to believe that the market is somewhat oversold and consequently new business will lag to some extent over the next month. By the same token it is doubtful whether prices will strengthen to any extent during the same period. Joplin ore remains unchanged at \$29 and \$30 for flotation and mill grades respectively. Operators are refusing to meet all demands of smelters and only disposed of 3500 tons during the week. Production amounted to 8150 tons and shipments during the week were heavy enough to reduce stocks by 700 tons to 22,600 tons.

Tin

Over a week ago domestic consumers came into the market for sizable commitments at 48.25c. a lb., and this activity served to force the price upward in London and New York. The advancing quotations were followed by poorer demand until new buying practically ceased. During the past week no interest has been shown in this market and the prices have declined slightly, which is a normal market reaction. Straits tin was available this morning in New York at 49.75c. a lb., for early delivery, with few takers. The market abroad has also been only mildly active in sympathy with conditions here. Quotations on first call this morning in London were £220 10s. and £210 10s. for spot and future standard respectively, and £218 5s. for Straits at Singapore.

Lead

With consumers coming into the market last week for quantities in excess of producers' daily ore intake, sellers were encouraged to mark the market up ten points. This advance did not discourage demand to any great extent. At least 30 per cent of estimated September requirements are yet to be bought, and October has hardly been touched. In view of this quantity of metal yet to be purchased, the market has all the appearance of firmness. The present price in New York is 4.35c. for prompt metal, with St. Louis the customary 15 points lower. St. Joseph Lead Co. continues to maintain a preferential price of \$1 a ton in the East, but is meeting competition in the West.

The Week's Prices. Cents Per Pound for Early Delivery

	Aug. 21	Aug. 22	Aug. 23	Aug. 24	Aug. 26	Aug. 27
Electrolytic copper, N. Y.*	8.25	8.25	8.25	8.25	8.25	8.25
Lake copper, N. Y.	8.62 1/2	8.62 1/2	8.62 1/2	8.62 1/2	8.62 1/2	8.62 1/2
Straits tin, spot, New York	51.00	50.00	49.75	49.25	49.25	49.25
Zinc, East St. Louis	4.60	4.60	4.60	4.60	4.60	4.60
Zinc, New York†	4.97 1/2	4.97 1/2	4.97 1/2	4.97 1/2	4.97 1/2	4.97 1/2
Lead, St. Louis	4.15	4.20	4.20	4.20	4.20	4.20
Lead, New York	4.30	4.35	4.35	4.35	4.35	4.35

*Refinery quotations; price 1/4c. higher delivered in Connecticut.
†Includes emergency freight charge.

Aluminum, virgin 99 per cent plus, 19c. to 21c. a lb., delivered.
Aluminum, No. 12 remelt, No. 2 standard, in carloads, 16.25c. a lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 13c. a lb., New York.
Quicksilver, \$69 to \$71 per flask.
Brass ingots, commercial 85-5-5-5, 8c. a lb., delivered; in Middle West 1/4c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig	50.50c. to 51.50c.
Tin, bar	52.50c. to 53.50c.
Copper, Lake	9.50c. to 10.50c.
Copper, electrolytic	9.50c. to 10.50c.
Copper, castings	9.25c. to 10.25c.
*Copper sheets, hot-rolled	15.50c.
*High brass sheets	14.00c.
*Seamless brass tubes	15.75c.
*Seamless copper tubes	15.75c.
*Brass rods	12.50c.
Zinc, slabs	5.75c. to 6.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.25c.
Lead, American pig	4.85c. to 5.85c.
Lead, bar	5.85c. to 6.85c.
Lead, sheets	8.00c.
Antimony, Asiatic	13.50c. to 14.50c.
Alum., virgin, 99 per cent, plus	23.30c.
Alum., No. 1 for remelting, 98 to 99 per cent	18.00c. to 19.00c.
Solder, 1/2 and 1/2	30.00c. to 31.00
Babbitt metal, commercial grades	25.00c. to 60.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	54.00c.
Tin, bar	56.00c.

Copper, Lake	9.50c.
Copper, electrolytic	9.50c.
Copper, castings	9.25c.
Zinc, slabs	6.00c. to 6.25c.
Lead, American pig	4.95c. to 5.30c.
Lead, bar	8.25c.
Antimony, Asiatic	15.00c.
Babbitt metal, medium grade	19.25c.
Babbitt metal, high grade	58.00c.
Solder, 1/2 and 1/2	31.75c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	6.00c.	6.75c.
Copper, hvy. and wire	5.87 1/2c.	6.37 1/2c.
Copper, light and bottoms	4.87 1/2c.	5.37 1/2c.
Brass, heavy	3.25c.	3.87 1/2c.
Brass, light	2.50c.	3.25c.
Hvy. machine composition	5.37 1/2c.	5.87 1/2c.
No. 1 yel. brass turnings	4.50c.	5.00c.
No. 1 red brass or compos. turnings	4.87 1/2c.	5.37 1/2c.
Lead, heavy	3.25c.	3.62 1/2c.
Zinc	2.37 1/2c.	2.75c.
Cast aluminum	11.62 1/2c.	12.75c.
Sheet aluminum	12.75c.	14.25c.

Fabricated Structural Steel

Lettings Lower—New Projects Gain

STRUCTURAL steel awards of 12,400 tons compare with 23,608 tons a week ago. The largest bookings include 1500 tons for the Tri-Borough Authority in New York, 1300 tons for a State highway bridge at Parkersburg, W. Va., and 1065 tons for a post office, court house and custom house at Wilmington, Del. New projects of 14,720 tons compare with 9197 tons in the previous week and 14,780 tons two weeks ago. Among new jobs reported are 9000 tons for highway work in Missouri and 975 tons for a plant for the International Harvester Co. at East Moline, Ill. Plate lettings total only 755 tons, with 4675 tons pending. Structural steel awards for the week follow:

NORTH ATLANTIC STATES

New York, 1500 tons, contract No. 45, Tri-Borough Authority, to Harris Structural Steel Co.

Far Rockaway, Long Island, 115 tons, post office, to Lehigh Structural Steel Co.

Newark, N. J., 430 tons, sub-section 1, Sec. 1, to American Bridge Co.

Rensselaer, N. Y., 540 tons, General Aniline Co., to Belmont Iron Works.

Oneida County, N. Y., 125 tons, State highway bridge, to Lackawanna Steel Construction Co.

Ithaca, N. Y., 150 tons, office building for Central Grange League Federation, to McClintic-Marshall Corp.

Harrisburg, Pa., 100 tons, Masonic building, to A. B. Rote & Co.

Pottstown, Pa., 100 tons, bridge, to Shoemaker Bridge Co.

Wilmington, Del., 1065 tons, post office, court house and custom house, to Lehigh Structural Steel Co.

Dunmore, Pa., 640 tons, Scranton Electric Co. service building, to Anthracite Bridge Co.

Wilkes-Barre, Pa., 440 tons, addition to lace mill, to Weatherly Steel Co.

Ford City, Pa., 140 tons, Pittsburgh Plate Glass Co. furnace hall extension, to Pittsburgh-Des Moines Steel Co.

Pittsburgh, 160 tons, conveyors placed by Koppers Construction Co., for erection at Wilmington, Del., to Ohio Structural Steel Co.

Blue Plains, D. C., 165 tons, unit No. 4, to Stacey Brothers.

SOUTH AND SOUTHWEST

Morehead, Ky., 200 tons, bridge, to Bethlehem Fabricators, Inc.

Hopewell, Va., 280 tons, building for Atmospheric Nitrogen Corp., to Virginia Bridge & Iron Co.

Parkersburg, W. Va., 1460 tons, State highway bridge, to McClintic-Marshall Corp.

Huntington, W. Va., 380 tons, Twenty-ninth Street bridge, to Mount Vernon Bridge Co.

State of Georgia, 205 tons, highway bridge over Flint River, to Bethlehem Fabricators, Inc.

Cross County, Ark., 120 tons, bridge, to Arkansas Foundry Co.

CENTRAL STATES

Cleveland, 160 tons, administrative building, Easterly Sewage Disposal Plant, to McClintic-Marshall Corp.

Findlay, Ohio, 100 tons, building for Ohio Fuel Co., to Pittsburgh-Des Moines Steel Co.

Detroit, 225 tons, manufacturing building, to McClintic-Marshall Corp.

Dearborn, Mich., 320 tons, annealing balcony for cold finishing mill, to Wisconsin Bridge Co.

Rapid River, Mich., 220 tons, State highway bridge, to American Bridge Co.

Owens, Ill., 270 tons, warehouse addition for Adams & Sanford, to Mississippi Valley Structural Steel Co.

Bensenville, Ill., 160 tons, machine shop for Milwaukee Road, to Wisconsin Bridge & Iron Co.

Chicago, Burlington & Quincy Railroad, 400 tons, bridge, to American Bridge Co.

WESTERN STATES

Denver, 200 tons, skating rink, to E. Burkhardt & Sons.

Emeryville, Cal., 135 tons, addition for Paraffine Companies, Inc., to Moore Dry Dock Co.

Everett, Wash., 300 tons, pulp mill for Weyerhaeuser Timber Co., to Isaacson Iron Works.

San Francisco, 590 tons, building for Pacific Telephone & Telegraph Co., to Golden Gate Iron Works.

Santa Fe Springs, Cal., 100 tons, machine shop for Wilshire Oil Co., to an unnamed bidder.

Los Angeles, 100 tons, head frame for Pacific Borax Co., to an unnamed bidder.

Los Angeles, 100 tons, addition to John Muir high school, to Pacific Iron & Steel Co.

Los Angeles, 710 tons, airplane factory for North American Aviation, Inc., to Consolidated Steel Corp.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

Milbury, Mass., 150 tons, two State bridges.

Mount Morris, N. Y., 150 tons, Children's State hospital building.

Bridgeton, N. J., 300 tons, State highway bridge, tenders Sept. 9.

New Brunswick, N. J., 250 tons, United States Playing Card Co. building.

Chester, Pa., 150 tons, post office, re-advertised for Sept. 23.

Washington, 300 tons, sewage plant.

THE SOUTH

Angeles, Tex., 225 tons, tainter gates.

CENTRAL STATES

Granite City, Ill., 275 tons, cranes.

East Moline, Ill., 975 tons, International Harvester Co.

Genoa, Wis., 2000 tons, Mississippi River work; Sims Helmers, Inc., low bidder on general contract.

State of Wisconsin, 175 tons, bridges in Dane and Outagamie counties; bids Sept. 10.

State of Missouri, 9000 tons, highway work.

Jefferson City, Mo., 130 tons, dormitories for Alcoa State farm; Simon Con-

struction Co., Columbia, Mo., general contractor.

Kiowa, Kan., 325 tons, bridge.

WESTERN STATES

Wista, Mont., 250 tons, bins.

Needles, Cal., 500 tons, building.

Boulder City, Nev., 400 tons, butterfly valves and bulkheads for Boulder dam power house; bids under advisement.

Los Angeles, 350 tons, I-beams for Metropolitan Water District, Specification 350; bids opened.

Los Angeles, 5500 or 5750 tons, transmission towers; Pacific Coast Steel Corp. low bidder.

San Francisco, 140 tons, lighting standards for Golden Gate bridge; Alta Electric Co. general contractor.

Oakland, Cal., 800 tons, High Street bridge; plans being prepared.

Fort Seward, Cal., 100 tons, suspension bridge; bids opened.

Torrance, Cal., 125 tons, booster pump station; plans being prepared.

FABRICATED PLATES

AWARDS

Pittsford, N. Y., 250 tons, two tanks for Tide Water Oil Co., to Hammond Iron Works.

Quakertown, Pa., 125 tons, standpipe, to Oreland Boiler & Tank Works.

New York, 230 tons, three tanks for Petroleum Wholesale Corp., to Hammond Iron Works.

San Diego, 150 tons, pontoons, for Hydraulic Dredging Co., divided between Pacific Coast Steel Corp. and Columbia Steel Co.

NEW PROJECTS

Ordgen, Utah, 4500 tons, 36 to 48-in. welded pipe, alternates on reinforced concrete and cast iron pipe; bids Sept. 4.

Los Angeles, 175 tons, welded ventilating pipe for Department of Water and Power, Specification 1770; bids opened.

San Francisco, 175 tons, material for Naval Purchasing Officer, Specification 4235; bids Aug. 29.

Pipe Lines

Muskegon Gas Co., Muskegon, Mich., plans steel pipe line to North Muskegon for natural gas supply, including distributing system.

Mobile Gas Service Corp., 162 St. Francis Street, Mobile, Ala., plans steel pipe line system for gas supply at Toulminville, Ala., and vicinity, where franchise has been secured.

Skateok, Okla., has let contract to B. & M. Construction Co., Petroleum Building, Oklahoma City, for 12 miles of 8-in. steel pipe from Mohawk pumping station, Tulsa, Okla., to city limits for main water supply. Cost about \$95,000 with other waterworks improvements. Victor H. Cochran, Wright Building, Tulsa, is consulting engineer.

National Park Service, Underwood Building, San Francisco, has low bid from Knowlton & Rupert, Layton, Utah, for steel pipe line system for water supply in Old Faithful district, Yellowstone National Park, Wyo., on each of four proposals, at prices of \$36,014.40, \$34,660.40, \$35,108.40 and \$33,427.20, respectively. Work will include 11,250 ft. of 8, 10 and 12-in. steel pipe; 975 ft. of 2 and 3-in. galvanized steel pipe; also 1450 ft. of 4 and 6-in. cast iron pipe.

Torrance, Cal., is completing plans for water system improvements requiring 195 tons.

Tacoma, Wash., is arranging fund of \$500,000 through Federal aid for third unit of Green River gravity pipe line for water supply, replacing existing line, requiring 13,490 ft. of 42-in. and 560 ft. of 58-in. welded steel pipe, with alternate bids to be asked on concrete pipe; 5698 ft. of 48-in. and 1136 ft. of 42-in. steel pipe. W. A. Kunigk is city water superintendent in charge.

Methods Employed in Making Worm Gears

(CONTINUED FROM PAGE 12)

are fed into the work-piece simultaneously until correct center distances are reached, one on either side of the blank. Then one is rotated in one direction to cut the tooth form on the front of the teeth, while the other is rotated in the opposite direction to form the flanks on the back of the tooth. Production rates as high as 270 sets of gears per hour per operator have been reached with such equipment.

For small production of highly specialized gearing, methods have also been developed whereby a fly tool can be used to produce the gearing, thereby reducing tool cost.

The natural wearing in of the gears in service will automatically remove such minor inaccuracies as may occur in routine production. Where maximum initial quietness is essential, these small inequalities may be removed before assembly with special lappers designed for the purpose. Grinding is not required.

Since both worm and wheel are generated by hobs and generating cutters of identical mating capacity, any wear that occurs will tend to improve the gears in service.

The true surface contact obtained with this process, giving an average approximately 30 times the contact of conventional worm gearing, it is stated, makes heat-treatment of worm or wheel unnecessary, and high-carbon steel can be used if desired. For some applications cast iron and steel have been found a satisfactory combination, reducing the materials cost, the cast iron replacing bronze.

Hobbing of Worm and Wheel Identical

It might be noted further that since the hobbing methods for worm and wheel are identical, the same machine or machines can be used for hobbing both worm and wheel. After the worm is generated, it can be removed and replaced by a hob to form the teeth on the wheel blank, the latter having been mounted on the machine in place of the identically-shaped cutter which hobbled the worm.

An important feature of Cone worm gears in service is their self-oiling characteristics. The worm thread when engaging the wheel

centers it in the form of a wedge forcing in oil, which is then carried through the wheel by the sliding action across the face of the teeth. The teeth to a large extent apparently ride on a cushioning film of oil—which may also account in part for the high efficiencies of Cone gearing. As a result of these characteristics, the gears can be operated on ordinary lubricants, including engine oil.

In addition to the surface contact secured with this manufacturing process, it is evident that there are as many teeth in contact as the design "envelops." Thus the load is distributed over a greater number of teeth, resulting in quieter and smoother operation. Less bending of the worm shaft is also a corollary of better load distribution.

Cone worm gearing is today being used in a wide variety of applications, with service speeds ranging from 30,000 r.p.m. in one case to one revolution every quarter hour in another. Ratios of gears in use range from 100 to 1 on gears 6 ft. in diameter to 1 to 1 ratio for gears of 1-in. diameter.

A motor car manufacturer reports 40,000,000 miles of service operation on 3000 cars equipped with high-speed Cone worm gears without replacement for wear or failure.

Foundrymen Deliberate Silicosis Hazard

(CONTINUED FROM PAGE 27)

finds this description of the disease of value, he is usually much more interested in methods of combating the hazard in his own shop. By far the most important practice is to subject each new worker to a complete medical examination, including an X-ray of the chest. The average physician is not competent to interpret these X-rays, but a foundry can usually secure the services of a medical man qualified for such work. If a worker is over 30 years of age and shows no symptom of silicosis or tuberculosis, he is an excellent risk. That is, it is doubtful whether he will ever be disabled by silicosis, even though subjected to ordinary foundry dust for the remainder of his life. If a man has only a simple occupational fibrosis (silicosis) and is past the

age of 30, he is also an excellent risk and may be employed in any capacity. If a man shows any signs of tuberculosis, he should either not be employed or else should be given a job where the dust hazard is not severe. It is noted here that young men under the age of 30 are not perfect risks in hazardous dust, since they are in the age period during which they may still contract tuberculosis. Therefore, young men, even though they show no sign of tuberculosis or silicosis, should not be employed where dust is particularly severe.

Of equal importance to pre-employment medical examination is the practice of subjecting all employees, from the superintendent to the office boy, to periodic examinations, say once a year or, at the most, once every two years. If these periodic examinations should show an old employee as contracting tuberculosis, he should be transferred to a job away from silica dust; for instance, a watchman's job. If a younger employee should become tubercular, he should be urged to quit work and place himself under a doctor's care. Again, it should be emphasized that silicosis itself is not dangerous and does not cause disability. Only when it is compounded with tuberculosis or some other pulmonary disorder is the situation dangerous.

Medical examinations will serve to weed out new employees who would of a certainty become disabled. It also enables an employer to catch possible lung cases of older employees in time to transfer them to jobs wherein the hazard is negligible, thus preventing the growth of the disease.

How to Minimize Dust Hazards

The average foundryman, likewise, has a specific responsibility in removing dust hazards or minimizing them as much as possible. It is possible to use standard testing apparatus to check the dust content of the air. If the silica particles are excessive, steps should be taken to reduce the dust. Several procedures are possible. Rafter dust should be entirely removed and walls, rafters and floors should be frequently cleaned. It is desirable also that there be thorough sprinkling prior to cleaning in order to keep dust production to a minimum. The foundry should have cement floors to facilitate cleaning. Sand blasting operations should be confined to a room separate from the foundry proper. It is also desirable to clean castings with water sprays instead of air, thus eliminating a great dust producer. Likewise it is often more efficient to use low air pressure during cleaning rather than high pres-

sure. Money is saved because of less air consumption, and less dust is produced without altering the efficiency of the cleaning operation.

Two large sources of dust are at the shake-out and in the sand-conditioning equipment. It is often advisable to have conveyors carry the castings to a shake-out separated from the foundry proper. Or, more suitable, the shake-out can be equipped with exhaust fan systems. Likewise, the sand-conditioning unit can be equipped with suction

fans. Two practical applications of dust removal were described in THE IRON AGE of Aug. 22, pp. 28 and 42-B.

With the adoption of these practices foundry atmosphere can be kept well below the danger limit for silica particle content. At present many foundries still refrain from attacking the disease at the source. And this is the major reason why the death rate of iron and steel foundrymen is two and one-half times that of all other

workers combined, with one-third of all foundrymen dying from respiratory diseases, as compared with a little over one-fifth of all other workers dying from the same cause. The reduction of this over-balanced death rate from respiratory diseases, from an economic standpoint alone, would more than repay the foundry industry. Workmen would be more efficient, sickness would be greatly reduced and insurance base rates would be materially lowered.

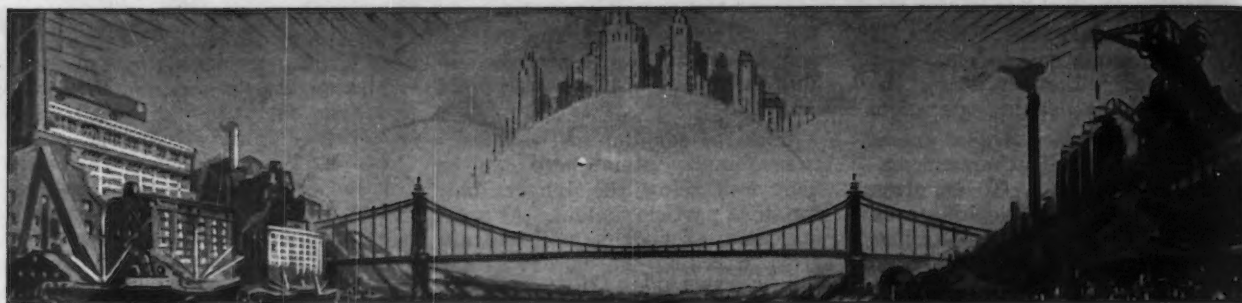
Production of Steel Products for Sale in Second Quarter and First Half

(AMERICAN IRON AND STEEL INSTITUTE)

	Number of Companies	Items	Annual Capacity Gross Tons	Production for Sale (Gross Tons)						To Members of the Iron and Steel Code for Conversion Into Code Products	Total	Per Cent of Capacity	Export	To Members of the Iron and Steel Code for Conversion Into Code Products	Total	Per Cent of Capacity	Export	To Members of the Iron and Steel Code for Conversion Into Code Products	Total	Per Cent of Capacity	Export
				Current Quarter			First Half														
				Total	Per Cent of Capacity	Export	Total	Per Cent of Capacity	Export												
STEEL PRODUCTS:																					
Ingot, blooms, billets, slabs, sheet bars, etc.	42	1	.....	925,402	...	8,986	837,776	2,067,373	...	28,651	1,867,969	...	...	...	...	...	...	...	...	...	...
Heavy structural shapes.....	14	2	5,440,820	328,534	24.2	8,081	.....	585,830	21.5	17,209	.....	...	...	...	...	...	...	...	...	...	...
Steel piling	6	3	270,000	32,550	48.2	2,182	.....	57,409	42.5	4,086	.....	...	...	...	...	...	...	...	...	...	...
Plates—Sheared and universal.....	26	4	6,185,469	307,617	19.9	8,165	.....	603,006	19.5	18,557	.....	...	...	...	...	...	...	...	...	...	...
Skelp	10	5	.....	88,860	...	5,031	56,989	163,181	...	6,820	113,889	...	...	...	...	...	...	...	...	...	...
Rails—Standard (over 60 lb.).....	7	6	4,170,000	204,181	19.6	10,163	.....	355,266	17.0	11,938	.....	...	...	...	...	...	...	...	...	...	...
Light (60 lb. and under).....	9	7	805,820	16,038	8.0	6,510	.....	30,376	7.5	7,051	.....	...	...	...	...	...	...	...	...	...	...
All other (incl. girder, guard, etc.).....	3	8	140,000	10,314	29.5	2,281	.....	15,351	21.9	2,582	.....	...	...	...	...	...	...	...	...	...	...
Splice bar and tie plates.....	20	9	1,622,393	80,213	19.3	1,354	.....	136,634	16.8	2,068	.....	...	...	...	...	...	...	...	...	...	...
Bars—Merchant	47	10	.....	588,094	...	9,468	53,939	1,234,235	...	22,628	123,044	...	...	...	...	...	...	...	...	...	...
Concrete reinforcing	37	11	.....	127,434	...	1,808	.....	220,661	...	3,943	.....	...	...	...	...	...	...	...	...	...	...
Cold finished—carbon	18	12	.....	108,158	...	1,420	.....	232,945	...	2,723	.....	...	...	...	...	...	...	...	...	...	...
Alloy—Hot rolled	18	13	.....	124,109	...	495	7,859	262,446	...	1,344	19,789	...	...	...	...	...	...	...	...	...	...
Cold finished	14	14	.....	12,478	...	43	.....	26,806	...	95	.....	...	...	...	...	...	...	...	...	...	...
Hoops and baling bands.....	8	15	.....	11,735	...	269	.....	22,407	...	384	.....	...	...	...	...	...	...	...	...	...	...
Total bars	72	16	13,166,885	971,948	29.5	13,503	61,798	1,999,500	30.4	31,117	142,833	...	...	...	...	...	...	...	...	...	...
Tube rounds	8	17	.....	15,561	...	.....	15,815	31,415	...	...	26,954	...	...	...	...	...	...	...	...	...	...
Tool steel bars (rolled and forged).....	18	18	110,321	7,247	26.3	21	.....	15,149	27.5	50	.....	...	...	...	...	...	...	...	...	...	...
Pipe and tube—Butt-weld.....	15	19	1,829,928	122,082	26.7	6,096	.....	228,519	25.0	14,422	.....	...	...	...	...	...	...	...	...	...	...
Lap-weld	9	20	1,719,534	73,527	17.1	2,795	.....	131,302	15.3	6,420	.....	...	...	...	...	...	...	...	...	...	...
Electric-weld	3	21	813,571	15,018	7.4	25	.....	29,109	7.2	125	.....	...	...	...	...	...	...	...	...	...	...
Seamless	15	22	2,519,978	211,147	33.5	6,566	.....	387,080	30.7	15,539	.....	...	...	...	...	...	...	...	...	...	...
Conduit	6	23	142,350	9,330	26.2	.....	.....	18,944	26.6	.....	.....	...	...	...	...	...	...	...	...	...	...
Mechanical Tubing	5	24	212,050	17,206	32.5	1,479	.....	37,443	35.3	3,022	.....	...	...	...	...	...	...	...	...	...	...
Wire rods	20	25	.....	119,565	...	4,721	64,338	245,457	...	9,717	125,003	...	...	...	...	...	...	...	...	...	...
Wire—Drawn	46	26	1,777,276	207,776	46.8	10,637	3,579	431,507	43.6	19,066	6,100	...	...	...	...	...	...	...	...	...	...
Nails and staples.....	24	27	1,173,362	100,965	34.4	3,184	.....	193,479	33.0	6,639	.....	...	...	...	...	...	...	...	...	...	...
Barb., fence, bale ties, fence posts, etc.	28	28	1,588,764	147,257	37.1	8,288	.....	258,689	32.6	16,223	.....	...	...	...	...	...	...	...	...	...	...
Black plate	15	29	428,879	69,829	65.1	2,090	25,143	137,658	64.2	4,050	48,259	...	...	...	...	...	...	...	...	...	...
Tin plate	17	30	2,628,256	491,060	74.7	34,487	.....	882,404	67.1	80,616	.....	...	...	...	...	...	...	...	...	...	...
Sheets—Hot-rolled	26	31	.....	242,872	...	4,499	22,571	557,764	...	9,546	44,994	...	...	...	...	...	...	...	...	...	...
Hot-rolled annealed	26	32	.....	333,884	...	11,834	106	717,547	...	22,771	1,185	...	...	...	...	...	...	...	...	...	...
Galvanized	19	33	.....	203,466	...	21,622	.....	382,043	...	41,279	.....	...	...	...	...	...	...	...	...	...	...
Cold-rolled	20	34	.....	373,123	...	11,476	.....	817,044	...	19,680	.....	...	...	...	...	...	...	...	...	...	...
All other	16	35	.....	89,945	...	1,799	.....	189,435	...	3,406	.....	...	...	...	...	...	...	...	...	...	...
Total sheets	37	36	7,880,967	1,243,290	63.1	51,230	22,677	2,663,833	67.6	96,682	46,179	...	...	...	...	...	...	...	...	...	...
Strip—Hot-rolled	36	37	3,478,052	433,023	49.8	7,963	41,260	980,013	56.4	17,234	103,115	...	...	...	...	...	...	...	...	...	...
Cold-rolled	41	38	1,026,454	117,975	46.0	2,754	.....	264,438	51.5	4,655	.....	...	...	...	...	...	...	...	...	...	...
Wheels (car, rolled steel).....	6	39	398,284	17,053	17.1	902	.....	43,909	22.9	7,686	.....	...	...	...	...	...	...	...	...	...	...
Axles	10	40	441,900	4,527	4.1	320	.....	10,599	4.3	1,159	.....	...	...	...	...	...	...	...	...	...	...
Track spikes	12	41	345,760	20,066	23.2	395	.....	33,460	19.4	597	.....	...	...	...	...	...	...	...	...	...	...
All other	7	42	21,207	2,057	38.8	728	.....	4,874	46.0	1,822	.....	...	...	...	...	...	...	...	...	...	...
Total code steel products.....	176	43	.....	6,411,213	...	219,887	1,132,166	13,043,112	...	435,798	2,484,729	...	...	...	...	...	...	...	...	...	...
Estimated total steel finishing capacity based on a yield from ingots of 69.4 per cent..	..	44	46,832,700	.....	45.1	.....	.....	.....	45.1	...	...	...	...	...	...	...	...	...	...	...	...
IRON PRODUCTS:																					
Pig iron, ferromanganese and spiegeleisen..	35	45	.....	867,626	...	1,478	234,019	1,541,461	...	2,172	506,607	...	...	...	...	...	...	...	...	...	...
Ingot molds	6	46	.....	57,227	...	1,830	.....	123,637	...	2,821	.....	...	...	...	...	...	...	...	...	...	...
Plates	1	47	32,160	759	9.4	.....	.....	1,055	6.6	.....	.....	...	...	...	...	...	...	...	...	...	...
Skelp	1	48	.....	989	...	289	.....	700	...	560	1,347	...	...	...	...	...	...	...	...	...	...
Bars	13	49	238,919	9,900	16.6	2	320	21,336	17.9	3	780	...	...	...	...	...	...	...	...	...	...
Splice bars and tie plates.....	1	50	50,000	5,073	40.6	.....	.....	6,629	26.5	...	.....	...	...	...	...	...	...	...	...	...	...
Pipe and tubes.....	4	51	213,153	8,598	16.1	42	.....	17,068	16.9	102	.....	...	...	...	...	...	...	...	...	...	...
Sheets	1	52	18,000	169	3.8	.....	.....	225	2.5	...	.....	...	...	...	...	...	...	...	...	...	...
All other	5	53	53,300	2,583	19.4	.....	.....	5,235	19.6	...	.....	...	...	...	...	...	...	...	...	...	...
Total iron products (items 47 to 53)....	18	54	547,572	28,071	26.5	333	1,020	53,455	19.5	665	2,127	...	...	...	...	...	...	...	...	...	...

Total companies included 205.

Total steel products produced for sale, less shipments to members of iron and steel code for conversion into code products: Current quarter, 5,279,047: 45.1 per cent of finishing capacity; first half, 10,558,383: 45.1 per cent of finishing capacity. The above tonnages represent 69.4 per cent of the ingots produced by companies whose products are included above.



Plant Expansion and Equipment Buying

Interest Improves In Heavier Machine Tools

WHILE there has been no great change in the rate of demand for machine tools during the week, interest has strengthened in the heavier tools such as planers and boring mills. These lines naturally respond more slowly in replacement cycles than the lighter types of tools, because of their inherently longer life. The fact that interest is increasing in these lines is therefore another indication that the modernization move in this country is a decided reality.

Builders expect that the next two weeks which are just before the big Cleveland exhibition will show a lull in actual buying, but from the rate of inquiry being maintained, there will be plenty of business done during and following the show.

◀ NORTH ATLANTIC ▶

Electrolux, Inc., 500 Fifth Avenue, New York, maker of vacuum cleaners, parts, etc., has let general contract to H. K. Ferguson Co., 25 West Forty-third Street, for two new two-story additions to plant on Tomac Avenue, Greenwich, Conn., 100 x 141 ft., and 61 x 64 ft. respectively, the first to be used for new factory unit and other structure for office and operating service. Cost over \$100,000 with equipment.

Johns-Manville Corp., 22 East Fortieth Street, New York, has let general contract to Peterson & Weeks, Inc., 28 North Genesee Street, Waukegan, Ill., for two one-story additions to plant on Greenwood Avenue, Waukegan, 50 x 650 ft., and 100 x 200 ft. respectively. Cost close to \$200,000 with equipment.

New York Central System, 466 Lexington Avenue, New York, C. S. White, purchasing agent, asks bids until Sept. 4 for quantity of steel rails and maintenance of way supplies (Serial Contract No. 10).

Texas Co., 135 East Forty-second Street, New York, plans two new additions to oil refining plant at Port Arthur, Tex., to be used as a new solvent refining plant and as a solvent de-waxing division respectively, with capacities of 2000 and 1500 bbl. per day, in order noted. Additions are scheduled for completion early in 1936. Cost over \$500,000 with machinery. F. P. Dodge is plant superintendent at Port Arthur.

Board of Warren County Supervisors, Lake George, N. Y., plans new power plant in vicinity of Bolton, N. Y. Cost over \$80,000 with equipment and electrical distributing lines. Utilities Engineering Co., Inc., 1 Columbia Place, Albany, N. Y., is consulting engineer.

Signal Supply Officer, Army Base, Brooklyn, asks bids until Sept. 3 for quantity of cranks and carriers (Circular 16); until

Sept. 9 for quantity of radio control boxes (Circular 8); until Sept. 16 for quantity of switches, plugs, etc. (Circular 14), for quantity of fuses (Circular 18).

Nicholas Laundry Service, Inc., New York, organized by Max Glasel, 200 St. Nicholas Avenue, and associates, has leased eight-story and basement building at 138-40 West 124th Street, on site 50 x 100 ft., and will remodel and equip for new mechanical laundry. Cost over \$30,000 with machinery.

Department of Water Supply, Gas and Electricity, Municipal Building, New York, will make extensions and improvements in mechanical and repair shops in different parts of city, and similar work in connection with automobile service and garage buildings for municipal cars; a new one-story forge and blacksmith shop will be built. Fund of \$547,023 has been secured through Federal aid for buildings and equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 3 for two electric arc welding sets and spare parts, and 1000 ft. welding cable (Schedule 5799), for 760 oxygen and acetylene outlet regulators (Schedule 5812), for one water-cooled, air-operated spot welder (Schedule 5774), for 1076 water gage glass fittings (Schedule 5815), for 15,000 jack knives (Schedule 5839); until Sept. 10 for two torsion meters and spare parts (Schedule 5836), for Brooklyn Navy Yard; until Sept. 6 for quantity of radiator valves, check valves and thermostatic traps (Schedule 5806), for Brooklyn, Philadelphia and Charleston navy yards; until Sept. 10 for 97 motor-operated sirens (Schedule 5802), for Brooklyn and Philadelphia yards.

Quartermaster Supply Office, Army base, Brooklyn, asks bids until Sept. 3 for 400 rolls copper wire cloth and 10 rolls aluminum wire cloth (Circular 55).

Gottfried Krueger Brewing Co., 75 Belmont Avenue, Newark, N. J., soon takes bids for new seven-story and basement addition at Belmont and West Kinney Avenues, to be equipped as main brew-house and for other service. Cost close to \$185,000 with machinery. Waldemar Mortensen, 103 Park Avenue, New York, is engineer.

Board of Education, Mountain Lakes, N. J., plans manual training department in new two-story junior high school on Briarcliffe Road, for which bids have been asked on general contract. Cost about \$220,000. Financing has been arranged through Federal aid. Tooker & Marsh, 101 Park Avenue, New York, are architects.

Quartermaster Depot, Twenty-first and Johnston Streets, Philadelphia, asks bids until Sept. 4 for 50 kegs wire nails, 10 kegs common nails, and six kegs finishing nails (Circular 46).

Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., manufacturer of rolling mill machinery and parts, hydraulic presses, etc., has leased former Scott Foundry of Reading Iron Co., Reading, Pa., idle for past two years, and will occupy for new branch plant.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 3 for one hydraulic power press, complete with motor-driven pump, pre-filling tank, piping, etc. (Schedule 5827), for one carburizing vertical retort gas furnace (Schedule 5803), for Philadelphia Navy Yard; quantity of smoke indicators and spare parts for steam boilers (Schedule 5775), for Philadelphia and Brooklyn yards.

Central School Board, Kendall, N. Y., plans manual training department in new two-story high and grade school. Cost about \$225,000. Bley & Lyman, 505 Delaware Avenue, Buffalo, are architects.

Monarch Tank & Metal Fabricating Corp., Lackawanna, N. Y., has been organized by Kendall P. Smith and John B. Mollnow, both Perry, N. Y., to manufacture steel tanks and other steel plate products.

◀ NEW ENGLAND ▶

Westinghouse Electric & Mfg. Co., East Springfield, Mass., plans extensions and improvements in local plant, for increased production in electric refrigerator manufacturing division, including installation of additional equipment. Headquarters are at East Pittsburgh, Pa.

McKesson & Robbins, Inc., Grasmere Avenue, Fairfield, Conn., has asked bids on general contract for new addition. Cost over \$40,000 with equipment. Albert Kahn, Inc., New Center Building, Detroit, is architect and engineer.

Gulf Refining Co., Seventh and Grant Streets, Pittsburgh, has approved plans for new bulk oil storage and distributing plant at Burlington, Vt., comprising main warehouse unit, steel tanks with capacity

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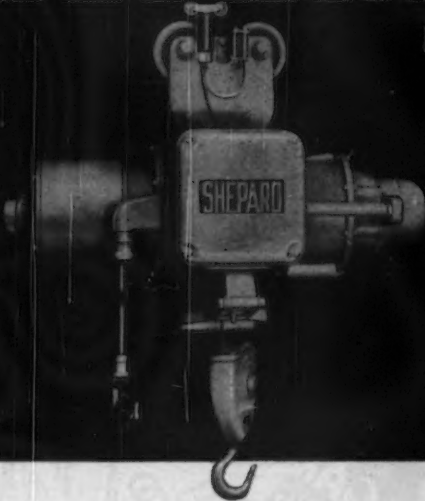
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of 3,000,000 gals., and other facilities. Cost over \$60,000 with equipment.

Board of Education, Brunswick, Me., plans manual training department in new three-story and basement high school. Cost about \$250,000. Financing is being arranged through Federal aid. Coombs & Harriman, 11 Lisbon Street, Lewiston, Me., are architects.

Fafnir Bearing Co., Orange Street, New Britain, Conn., has taken out a permit for one-story addition to steam power house, 20 x 50 ft.

School Board, Penacook, N. H., plans manual training department in new two-story high school. Cost about \$175,000. Financing will be arranged through Federal aid. Wells, Hudson & Granger, Main Street, Hanover, N. H., are architects.

◀ SOUTH ATLANTIC ▶

Tide Water Power Co., Wilmington, N. C., plans construction of transmission and distributing lines in about 16 counties of State for rural electrification, totaling 400 miles, including new power line from Beaufort to coast, about 30 miles. Cost over \$500,000 with power substations and service facilities. Financing is being arranged through Federal aid.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 3 for 100 aircraft propeller blades for Pensacola, Fla., Navy Station (Schedule 5842).

Dayton Rubber Mfg. Co., Dayton, Ohio, has acquired plant and business of McClaren Rubber Co., Charlotte, N. C., and will consolidate with organization. Charlotte plant will be removed to main mill at Dayton. John A. McMillan is president of purchasing company.

City Council, Avon Park, Fla., plans new electrical distributing system, with power substation, switching and other

operating facilities. Cost about \$75,000. George A. Main, Daytona Beach, Fla., is consulting engineer.

Construction Quartermaster, Naval Air Base, Charleston, S. C., soon takes bids for new hangar, with shop and reconditioning facilities, and other structures at local station.

◀ WASHINGTON DIST. ▶

Bureau of Ordnance, Navy Department, Washington, asks bids until Sept. 10 for quantity of liner, tube, gun barrel, housing and other forgings (Circular 174).

Purchasing and Contracting Officer, Holabird Quartermaster Depot, Baltimore, asks bids until Sept. 13 for quantity of automobile parts (Circular 28); until Sept. 16 for quantity of twist drills, wrenches, pliers, towing chains, screwdrivers, etc. (Circular 29).

Superintendent, Government Printing Office, Washington, plans new eight-story and basement plant addition at North Capitol and Eighth Streets, 175 x 384 ft., totaling about 484,000 sq. ft. floor space, for which an appropriation of \$5,885,000 has been authorized for land, building and equipment.

Krebs Pigment & Color Corp., Benhill Road, Curtis Bay, Baltimore, has plans for four new one-story additions. Cost over \$35,000 with equipment. Company is a subsidiary of E. I. du Pont de Nemours & Co., duPont Building, Wilmington, Del.

General Purchasing Officer, Panama Canal, Washington, asks bids until Sept. 6 for quantity of malleable iron pipe fittings, wrought iron or steel pipe straps, brass or bronze pipe fittings, malleable iron unions, steam hose couplings, gate valves, throttle valves, globe valves, stop cocks and other equipment (Schedule 3083).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until

Sept. 3 for one motor-driven pipe-threading and cutting-off machine (Schedule 5749), two motor-driven engine lathes (Schedule 5757), one motor-driven geared-head engine lathe (Schedule 5754), quantity of seamless steel tubing (Schedule 5798), for Eastern and Western navy yards; one motor-driven, rotary type fuel oil pump (Schedule 5751), for Seward's Point Navy Yard; one 100 kva. spot welding machine, with recorded and electronic timing device (Schedule 5771), for Washington Navy Yard.

◀ WESTERN PA. DIST. ▶

Erie Metal Specialties Co., Erie, Pa., recently organized by Frederick Ziesenheim, Girard, Pa., and associates, has leased local building on Peach Street, and will remodel and equip for new plant for manufacture of metal novelties.

Gulf Refining Co., Seventh and Grant Streets, Pittsburgh, has approved plans for new bulk oil storage and distributing plant on tract of land recently acquired on Cape Fear River waterfront, Fayetteville, N. C., to consist of several units, with steel tank facilities for gross capacity of 4,000,000 gals. Cost close to \$100,000 with equipment.

Elkhorn Piney Coal Mining Co., Koppers Building, Pittsburgh, plans new coal-loading terminal on Wanawha River. Application has been made for Federal permission.

West Virginia Airways, Inc., Charleston, W. Va., is negotiating with city for expansion in airport facilities, including construction of hangars, with shop and reconditioning facilities. Cost over \$200,000. P. D. Koontz is president.

◀ SOUTH CENTRAL ▶

J. A. Barry Distillery Co., Ekron, Ky., plans extensions and improvements in local distilling plant, with installation of new equipment for increased capacity. Cost over \$45,000 with machinery.

Director of Purchases, TVA, Knoxville, Tenn., asks bids until Sept. 11 for one 11-ton capacity full revolving electric gantry crane for Pickwick Landing power dam.

John Wathen Distillery Co., Lebanon, Ky., has plans for new addition to plant for storage and distribution, with capacity of about 20,000 bbl. Cost over \$75,000 with equipment.

Board of Education, Nashville, Tenn., plans training department in new two-story and basement high school, for which bids will be asked soon on general contract. Cost about \$500,000. Donald Southgate, Nashville Trust Building, is architect.

City Council, Lexington, Ky., Charles W. Fithian, city manager, plans new hangar at municipal airport, with repair and reconditioning facilities. Financing has been arranged through Federal aid. J. W. Guyn is city engineer in charge.

Lee County Power Association, Opelika, Ala., plans construction of new transmission and electrical distributing lines for service in rural districts of county, totaling about 70 miles, with power substation and operating facilities. Fund of \$63,000 is being arranged through Federal aid for project.

◀ SOUTHWEST ▶

Longwear Paint & Varnish Co., 301 Broadway, Kansas City, Mo., has asked bids on general contract for new one-story addition, 40 x 100 ft. Cost about \$35,000 with equipment. Clifton B. Sloan, Ninth Street and Baltimore Avenue, is architect.

Purchasing Officer, Department of Interior, Washington, asks bids until Sept. 3 for eight road plows for Muskogee, Okla. (Proposal 922).

Board of Trustees, Arkansas State College, Jonesboro, Ark., soon takes bids on revised plans for new power plant, engineering building and other structures. Cost over \$350,000 with equipment. A. N. McAninch, Pyramid Life Building, Little Rock, Ark., is architect.

Common Council, Pauls Valley, Okla., has plans for new municipal electric light and power plant, and electrical distribut-



BASOLIT

Pickling Tanks



Here is a Basolit Pickling Tank in action! The kind of action that demands a good tank. Low carbon strip steel travels continuously through this 240 foot tank filled with sulphuric acid and corrosive fumes. It is the kind of service Basolit Tanks are made for because they are

leak-proof, wear-proof, and they resist all commercial acids.

This Basolit Pickling Tank was installed at the plant of The Otis Steel Company in Sept. 1932, and an average of 1600 tons of strip steel per week are pickled in it. In this period there have been no maintenance costs.

Otis has two other Basolit Pickling Tanks. The performance of the first one sold the other two. Why don't you consider the economy of pickling the Basolit way?

NUKEM PRODUCTS CORP., Buffalo, N.Y.

NEW YORK

PITTSBURGH

LOS ANGELES

TORONTO, ONT.

WELDIT Gasaver

AUTOMATICALLY SHUTS OFF FLAME BETWEEN WELDS

... Saving 25 to 30%
in Gas and Oxygen



America's largest production plants use Weldit Gasavers. Cuts cost, eliminates idle torch flame hazards, increases production. Price \$10.00. Two weeks trial. Send for circular.

WELDIT ACETYLENE CO. 641 BAGLEY AVE.
DETROIT, MICH.

TEST THIS
FREE FOR TWO WEEKS
IN YOUR PLANT

ing system. Cost \$257,000 with equipment. Financing has been arranged through Federal aid. V. V. Long & Co., Colcord Building, Oklahoma City, Okla., are consulting engineers.

Board of Education, Columbia, Mo., plans two new manual training shops, to be located at Jefferson junior high and Hickman high school respectively. Financing will be carried out through Federal aid. Deering & Clark, Haden Building, are architects.

Common Council, Phillipsburg, Kan., has plans for new municipal electric light and power plant, using Diesel engine-generator units, with electrical distributing system. Fund of \$120,000 has been secured through Federal aid. Paulette & Wilson, Farmers Union Building, Salina, Kan., are consulting engineers.

City Council, Port Lavaca, Tex., has plans for new municipal cannery and processing plant for fish food. Fund of \$140,000 has been secured through Federal aid for building and equipment.

Board of Education, San Antonio, Tex., plans manual training department in new three-story high school in north side district, for which bids will be asked soon on general contract. Cost about \$200,000. A. B. and R. M. Ayers, Smith-Young Tower, and Adams & Adams, Insurance Building, are associated architects; Mathews & Kenan, Smith-Young Tower, are mechanical engineers.

City Council, Temple, Tex., plans new municipal airport on 80 acres, including hangar with repair and reconditioning facilities, oil storage and distributing building, and other field units. Cost over \$60,000 with equipment.

◀ MICHIGAN DISTRICT ▶

Zenith-Detroit Corp., foot of Hart Avenue, Detroit, manufacturer of carburetors, parts and kindred automotive equipment, has asked bids for new one-story addition, including improvements in present plant. Cost about \$50,000 with equipment. Leonard Willeke, 16934 Village Lane, is architect.

Chevrolet Motor Co., 3044 West Grand Boulevard, Detroit, has begun superstructure for new one-story addition to branch plant at Saginaw, Mich., 80 x 740 ft., comprising former crankshaft works of General Motors Corp., and to be operated in future as Plant No. 2. It will be equipped for production of bumpers, heat-

treating of forgings and kindred parts. Cost over \$200,000 with machinery.

Gorney Brewing Co., Flint, Mich., recently organized, has acquired local building at Poplar and Walnut Streets, totaling about 60,000 sq. ft. floor space, and will remodel and equip for new brewery. Cost over \$45,000 with machinery. Edward A. Gorney, formerly connected with Flint Hill Brewing Co., heads new organization, which is capitalized at \$250,000.

Mergraf Oil Refinery, 3757 Bellevue Avenue, Detroit, is planning construction of two new branch processing plants, one to be located in vicinity of New Work and other at Los Angeles for East and West coast service respectively, for manufacture of lubricating oil products. Each plant will have capacity of about 100,000 gal. per month, and will cost over \$75,000 with equipment. H. G. Holmes is president.

◀ MIDDLE WEST ▶

Oscar W. Hedstrom Pattern Works, 1419 West Carroll Avenue, Chicago, has acquired one-story building, 100 x 125 ft., at 4836-42 West Division Street, and will occupy for new machine works and pattern shop.

Abbott Laboratories, Inc., North Chicago, manufacturer of industrial and other chemical products, has asked bids on general contract for new two-story addition, 80 x 280 ft. Cost over \$100,000 with equipment.

District Quartermaster, Fort Des Moines, Des Moines, Iowa, asks bids until Sept. 3 for 840 fire shovels, 840 coal hods, 600 stove poker, etc. (Circular 34).

Tobin Packing Co., Inc., Fort Dodge, Iowa, meat packer, has let general contract to W. A. Klinger, Inc., Warnock Building, Sioux City, Iowa, for new two-story and basement addition, 64 x 64 ft. Cost about \$50,000 with equipment. F. M. Tobin is president.

Mill Tailings Recovery Co., Colorado Springs, Colo., Albert V. Hagen, president, has plans for new one-story cyanide mill at gold-mining properties in vicinity of Colorado Springs, to be equipped for handling about 500 tons of crude ore at one time. Cost about \$100,000 with machinery. Financing has been arranged through RFC. Edward L. Sweeney, United States National Bank Building, Denver, Colo., is consulting engineer in charge.

United States Engineer Office, Commerce Building, St. Paul, Minn., asks bids until Sept. 5 for power, control and electric systems for lock and dam No. 7, Mississippi River, near Dresbach, Minn., including transformers and regulators, remote control switch cabinets, limit switches, lock grounding system, dam power feeders, dam conduit system, gasoline-electric standby station unit with complete accessories, air signal equipment, portable lighting units, one hand-operated traveling bridge crane, central control station feeders and other equipment.

Board of Education, Glenwood, Ill., has let general contract to E. L. Lonergan Construction Co., 203 North Wabash Avenue, Chicago, for one-story addition to Glenwood manual training school. Cost about \$30,000 with equipment. Edwin H. Clark, 8 East Huron Street, Chicago, is architect.

Chapman-Doake Co., East Main Street and Broadway, Decatur, Ill., plans rebuilding of portion of flour and feed-milling plant, recently destroyed by fire. Loss close to \$100,000 with machinery.

◀ OHIO AND INDIANA ▶

Board of Education, Ashland, Ohio, plans new one-story vocational training shop at local high school. Fund of \$65,000 is being arranged by bond issue.

National Mortar & Supply Co., Woodville, near Fremont, Ohio, has approved plans for extensions, including storage bins and mechanical-handling facilities. Cost over \$100,000 with equipment.

Efficient Tool & Die Co., 9314 Elizabeth Avenue, Cleveland, has plans for new one and two-story addition, 60 x 81 ft. Cost about \$30,000 with equipment. H. M. Morse & Co., 827 Prospect Avenue, are architects and engineers.

City Council, Painesville, Ohio, is considering new municipal steam power plant for central heating service in public buildings and other structures in downtown district. Cost about \$150,000 with pipe line distributing system. Financing will be arranged through Federal aid.

Marsh Wall Tile Co., Dover, Ohio, composition sheet wall tiling, etc., plans rebuilding of portion of plant recently destroyed by fire. Loss over \$75,000 with machinery.

Air Corps, Patterson Field, Fairfield, Ohio, asks bids until Sept. 3 for one airplane cylinder grinding machine (Circular 13).

American Brass Mfg. Co., 1525 East Forty-ninth Street, Cleveland, has let general contract to J. L. Schoeffel, 10425 Baltic Road, for new one-story top addition to present plant, 60 x 145 ft. Cost close to \$40,000 with equipment.

Contracting Officer, Material Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Sept. 5 for 30,000 ft. rubber-covered flexible cable, 330,000 ft. tinned copper braid, 388,500 ft. aircraft power and lighting cable (Circular 113); until Sept. 6 for generator assemblies in lots of 237 to 900 (Circular 110), 220,000 ft. high-tension ignition cable (Circular 112), 214 electric drills (Circular 121); until Sept. 9 for quantity of automatic airship valve assemblies (Circular 119).

Muncie Malleable Foundry Co., Muncie, Ind., plans extensions and modernization in plant, with installation of new equipment. Cost about \$100,000 with machinery.

Southern Indiana Gas & Electric Co., Evansville, Ind., plans expansion in power plant, with installation of additional equipment, and extensions and improvements in power lines and distribution facilities. Cost \$851,000 with equipment. Application has been made for permission.

Contracting Officer, Quartermaster Corps, Jeffersonville, Ind., asks bids until Sept. 11 for electric drills, grinders, riveting hammers, oxy-acetylene torches, tool grinders, saws, air and water gun, motor stands, wrenches and other tools (Circular 25).

◀ PACIFIC COAST ▶

Link Belt Co., 400 Paul Street, San Francisco, has let general contract to Austin Co. of California, 516 Eighteenth Street, Oakland, Cal., for extensions and improvements in plant. Cost about \$25,000.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until

Only 4 words

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» » but they mean **cost-savings** and
bigger profits for you

Send your electrical sheet steel requirements to Armco—for easier, faster and more profitable production of equipment that's the peak in efficient performance. There is a correct Armco grade for every conceivable specification. Behind it is the 35-year-old experience of the pioneer producer of electrical sheet steel, the complete metallurgical research facilities, and the modern production equipment that insures quick deliveries of entirely satisfactory sheets. We'll be glad to talk over any problem with you. Just say the word.



**THIS BOOK EXPLAINS
ALL ARMCO GRADES**



Armco Tran-cor 60: for distribution transformers • Armco Tran-cor 66: for power and distribution transformers • Armco Tran-cor 72: general transformer work and large generators • Armco Intermediate Transformer: general transformer applications • Armco Special Electric: for high-efficiency motors and generators • Armco Electric: for rotating electrical machinery • Armco Armature: for d-c motors • Armco Field: for small low-cost motors • Armco Radio Grades: for every possible requirement.

THE AMERICAN ROLLING MILL COMPANY

Executive Offices: Middletown, Ohio *** District Offices in all Key Cities

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**FORGINGS
CARBON-ALLOY
AND SPECIAL
BASIC ELECTRIC
STEELS**

NATIONAL FORGE AND ORDNANCE CO.
IRVINE, WARREN COUNTY, PENNA., U. S. A.



COMplete control of all processing from selection of the melting charge to the finished condition is the N. F. & O. *guarantee of quality* in forgings furnished to your specifications—Smooth Forged, Hollow Bored, Rough or Finish Machined.

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Wrought Washer Mfg. Co. of Milwaukee, manufacturers of washers and stampings, through its Los Angeles sales agents, the Western Washer & Mfg. Co., is expanding its range of service in California and adjacent territory. The Western Washer & Mfg. Co. is moving this month into larger quarters located at 2111 E. 51st St., Los Angeles, California, where new cost-reducing machinery for making washers is being installed and production facilities are being generally enlarged. Added warehouse space is also being provided for the maintenance of more varied and larger stocks of both standard and special washers. This property is serviced by a private spur track to facilitate carload shipments.

Avery and Saul Co. of South Boston, Mass., have been appointed distributors of seamless steel and Toncan iron boiler tubes for the Globe Steel Tubes Co.

Ingersoll Milling Machine Co., Rockford, Ill., has appointed the J. H. Ryder Machinery Co., Toronto, to handle the sale of its cutters in the Ontario district, and the T. E. Ryder Machinery Co., Montreal, in Quebec and Eastern Canada.

American Electric Furnace Co., Boston, has appointed Carman Adams, Inc., 2970 West Grand Boulevard, Detroit, direct factory representative for Michigan.

Walker & Downing, advertising agency, Oliver building, Pittsburgh, specializing in industrial accounts, announces that effective Aug. 1, the J. B. Rogers Advertising Agency, also of Pittsburgh, merged with the Walker & Downing company.

New Trade Publications

Insulation.—Johns-Manville Corp., 22 East Fortieth Street, New York. Booklet entitled "Barriers to Industrial Waste," with table of recommendations for insulating materials covering heating and power, ovens and dryers, heat treating furnaces, steel mill, refrigerating, brewery and other equipment.

Hoist Buckets.—Industrial Brownhoist Corp., Bay City, Mich. Catalog No. 353. Gives picturized applications in many industrial uses. Tables of capacities, weights, dimensions, etc. Details of grab buckets, grapples and various types of buckets.

Combustion Control System.—Bailey Meter Co., Cleveland. Thirty-two page bulletin describing a complete combustion control system designed to automatically maintain steam pressure, combustion efficiency and furnace draft. Diagrams and photographs illustrate how the system may be applied to boilers ranging in size from 200 hp. up, and fired either with fuels in suspension or with stokers.

JUST BETWEEN US TWO

Into the Black by October

CLEVELAND and Chicago hotels now in the red will be out within five weeks. For the Machine Tool Exposition (Cleveland, Sept. 11-21), and the National Metal Exposition (Chicago, Sept. 30-Oct. 4) promise to establish post-depression and perhaps all-time attendance records.

If a man put his shoulders to it, he could make a convention trip unprofitable, but he would have to try very hard. Ninety-nine out of a hundred get enough sound ideas and inspiration to make the trip investment as remunerative as a share in the original Ford Motor Co.

There is something about rubbing elbows with men doing and worrying about the same things that removes carbon from mental valves and makes the cerebellum hum like a V-16.

Every time your brain reaches its absorption limit and your arches begin to groan, drop in at The Iron Age booth. If you look as if you wanted a few minutes to yourself, we won't even talk to you, except on invitation.

Floored

JUST one of the army of 14 Just-Between-Us-Two-ers ventured a solution of Mr. Dutton's fisherman-hat-stream problem (Aug. 15 IA, p. 114), and that solution was incorrect. The office mathematical genius says the stream flows three miles per hour, that it takes the fisherman exactly as long to get back to the hat as it took him to get away from it, and that if you use the familiar freight train analogy it will be as plain as the nose on Durante's face.

You're Wrong, Sezzee

DURING the painful post-vacation process of working ourselves back into the groove, our percentage of error rises sharply above its normal high. We made, for example, the stupid mistake of addressing Smith-Armstrong Forge, Inc., Cleveland, as a non-subscriber. E. L. Armstrong, secretary-treasurer, corrects us pleasantly:

"We have been subscribers several years, and wouldn't be without The Iron Age."

Tip for the Machine Tool Builders

IF we were running the Machine Tool Exposition we would have this quotation from Dewing's "Financial Policy of Corporations" displayed on a signboard 30 ft. high:

"The great majority of business . . . should invest the surplus where the return is largest. This is in the business itself. . . . And if, led by a foolish and childish conservatism, they invest their surplus in high-grade securities, such as municipal and government bonds, they are taking a lower rate of return than the money invested in their own business ought to bring; and if this is not so, the business should be liquidated and the services of the officers dispensed with."

We copped that from an ad the alert, successful *New York News* ran recently in Printers' Ink.

A Picture Is Worth . . .

ABOUQUET to U. S. Steel Corporation Subsidiaries for that dramatic composite photograph in the double-page spread headed, "This Dead Head Rides on Every Train" (Aug. 15 Iron Age, pp. 102-3).

Chest Thrown Out

WHAT I marvel at," said a recent visitor, "is how you manage to get out an issue of that size every week." We had just done him a favor, which may have distended his admiration beyond normal size.

But it was a fine opening; the Oberleutnant was away for the day, too. So we shot the works, and told him what a comprehensive, experienced, nationwide editorial staff we have; how we print more editorial pages than any other trade paper; how this reflects itself in high reader-interest; how high reader-interest enables us to carry more advertising than any other trade paper.

He seemed to be impressed.

Look, Mr. Ripley!

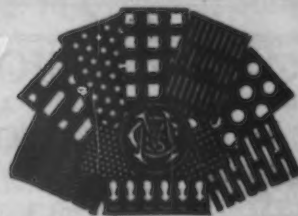
IN our tiresome trip through Dun-Bradstreet's we find that Tyler County, W. Va., has the patly named town of Little, pop. 55. But Little is London compared with Nicholas County's Gad, pop. 15. Gad has no traffic problem. Gadders can always find a place to park, but nothing to park in front of.—A.H.D.

MUNDT PERFORATED METALS

Large stocks of all metals always in hand ready to punch for any arrangement of perforations.

Sixty-one years of manufacturing perforated metals for every conceivable purpose assures satisfaction.

Write for Catalog of Patterns



TIN, STEEL, COPPER, ALUMINUM, BRONZE,
BRASS, ZINC, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS
28 FAIRMOUNT AVE., JERSEY CITY, N. J.

There's CONVENIENCE for you in Hendrick's COMPLETE line

Making Hendrick your perforated metal headquarters will assure you not only fine quality plate and an unusual standard of service but also the convenience of the "complete line" when you have an uncommon problem.

HENDRICK MFG. CO.

37 Dundaff Street, Carbondale, Pa.

SALES OFFICES IN PRINCIPAL CITIES
PLEASE CONSULT TELEPHONE DIRECTORY

Manufacturers of Mitee Open Steel Flooring; Elevator
Buckets; Light and Heavy Steel Plate Construction

THE STARTING POINT of



**FORGINGS
CARBON-ALLOY
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Look, Mr. Ripley!

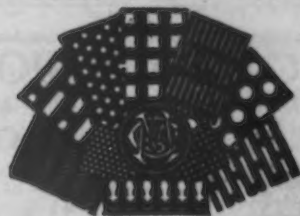
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MUNDT PERFORATED METALS

Large stocks of all metals always in hand ready to punch for any arrangement of perforations.

Sixty-one years of manufacturing perforated metals for every conceivable purpose assures satisfaction.

Write for Catalog of Patterns



TIN, STEEL, COPPER, ALUMINUM, BRONZE, BRASS, ZINC, ANY METAL, ANY PURPOSE

CHARLES MUNDT & SONS
88 FAIRMOUNT AVE., JERSEY CITY, N. J.

There's CONVENIENCE for you in Hendrick's COMPLETE line

Making Hendrick your perforated metal headquarters will assure you not only fine quality plate and an unusual standard of service but also the convenience of the "complete line" when you have an uncommon problem.

HENDRICK MFG. CO.

37 Dundaff Street, Carbondale, Pa.

SALES OFFICES IN PRINCIPAL CITIES
PLEASE CONSULT TELEPHONE DIRECTORY

Manufacturers of Mitee Open Steel Flooring; Elevator Buckets; Light and Heavy Steel Plate Construction

THE STARTING POINT of



**FORGINGS
CARBON-ALLOY
AND SPECIAL
BASIC ELECTRIC
STEELS**

NATIONAL FORGE AND ORDNANCE CO.

IRVINE, WARREN COUNTY, PENNA., U. S. A.



COMplete control of all processing from selection of the melting charge to the finished condition is the N. F. & O. *guarantee of quality* in forgings furnished to your specifications—Smooth Forged, Hollow Bored, Rough or Finish Machined.

Sept. 6 for one motor-driven grinder, tool and cutter machine for Mare Island, Cal., Navy Yard (Schedule 5796); until Sept. 13 for four electric whip hoists and spare parts for Puget Sound, Wash., Navy Yard (Schedule 5746).

Ray Becker Sheet Metal Co., Portland, manufacturer of sheet metal products, has leased new one story building, 100 x 120 ft., to be erected at Paige and Borthwick Streets by Allen H. McCurtain, Portland. Cost about \$35,000 with machinery. Joseph W. Heller, Henry Building, is architect in charge.

Purchasing Officer, Department of Interior, Washington, asks bids until Sept. 4 for 1280 spools galvanized cattle-type barbed wire for Casa Grande, Ariz.; 304 spools barbed wire for Cedar City, Utah; 128 spools barbed wire for Gold Hill, Utah; 27,560 steel fence posts and 600 lb. galvanized staples (Proposal 895).

Municipal Light Department, 302 City Hall, Pasadena, Cal., Benjamin F. De Lanty, general manager, asks bids until Sept. 5 for quantity of metal-clad switchgear for Maryland power substation.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 27 for one four-wheel type industrial tractor for Oakland, Cal. (Schedule 5746); until Sept. 3 for 60 portable electric drills for Mare Island, Cal., Navy Yard (Schedule 5761).

Linde Air Products Co., 2305 East Fifty-second Street, Los Angeles, has let general contract to Austin Co. of California, 777 East Washington Street, for new one-story addition for storage and distribution, 60 x 100 ft. Cost about \$30,000 with equipment.

Beringer's Winery, Inc., St. Helena (Napa County), Cal., has let general contract to Harry Thorsen, 1519 Kearney Street, for new distilling plant, comprising three main one-story units, 36 x 86 ft., for distillery; 25 x 85 ft., for fermenting department; and 42 x 100 ft., for storage and distribution. Cost close to \$45,000 with equipment.

Metropolitan Water District, 306 West Third Street, Los Angeles, asks bids until Dec. 3 for motor-driven centrifugal pumping units and auxiliary equipment for main pumping stations on Colorado River Aqueduct (Specification 116).

Wheeler-Osgood Corp., Tacoma, Wash., plans rebuilding of portion of plywood and hardwood mill recently destroyed by fire,

including shops, boiler plant and other units. Loss over \$500,000 with equipment.

Board of Education, City and County of San Francisco, City Hall, Civic Center, plans new one-story machine shop at George Washington school. Cost about \$25,000 with equipment. Miller & Pfueger, 580 Market Street, are architects.

◀ FOREIGN ▶

St. Thomas Bronze Co., First Avenue, St. Thomas, Ont., has plans for two new one-story additions for which superstructures will begin in September, 25 x 100 ft. and 25 x 85 ft. Cost over \$50,000 with equipment. William Dalziel is general manager.

Mond Nickel Co., Ltd., London, England, affiliated with International Nickel Co., 6 Wall Street, New York, plans new addition to plant at Clydach, Wales, including expansion in refinery at that place; a new experimental and research laboratory will be constructed at Birmingham, England. Entire project will cost about \$700,000 with equipment.

City Council, Johannesburg, South Africa, plans additions to municipal artificial gas plant, including installation of three new 1,500,000 cu. ft. capacity gas holders, electrostatic tar precipitation equipment with capacity of 6,000,000 cu. ft. daily, boilers and other equipment. Cost over \$400,000. Proposed to ask bids soon.

Industrie Chimiche Meridionali, S. A., Milan, Italy, manufacturer of industrial chemicals, plans addition to plant, comprising several one-story units for large increase in capacity. Cost over \$350,000 with machinery. A concession for project has been secured.

Acid-Resisting Metals, Ltd., London, England, recently organized, has taken over former Redheugh Foundry, Ltd., Dunston, near Gateshead-on-Tyne, England, idle for a number of years past, and will remodel and equip for new works for production of acid-resisting alloys.

Link-Belt Co., and subsidiaries, for the six months ended June 30, report net profit of \$530,584. This is equal to 62c. a share on the common stock after dividends on preferred stock. In the corresponding period of 1934, net profit was \$378,739.

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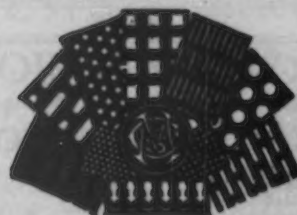
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SALES OFFICES IN PRINCIPAL CITIES
PLEASE CONSULT TELEPHONE DIRECTORY

Manufacturers of Miteo Open Steel Flooring; Elevator Buckets; Light and Heavy Steel Plate Construction

Cone 4-Spindle Automatics

Are economical and accurate producers of screw machine parts up to 6" diameter, 7" milling length. They cut costs, increase production, boost profits.

Write for particulars

CONE AUTOMATIC MACHINE CO., Inc.

WINDSOR, VERMONT

REPRESENTATIVES:

Detroit: J. C. Austerberry's Sons, 634 E. Congress St., Detroit, Mich.
Chicago: John H. Glover, 2127 North Sayre Ave., Chicago, Ill.
Ohio: S. B. Martin, 1077 Erie Cliff Drive, Lakewood, Ohio.
New England: Potter & Johnston Machine Co., Pawtucket, R. I.
Indiana: G. A. Richey, Chamber of Commerce Bldg., Indianapolis, Ind.
New York State: Syracuse Supply Co., Syracuse, N. Y.; also Rochester, N. Y.
Pennsylvania: Arch Machinery Co., 1005 Park Bldg., Pittsburgh, Pa.
Philadelphia: Lloyd & Arms, Inc., 133 South 36th St., Philadelphia, Pa.
California: C. F. Bulott Machinery Co., 829-831 Folsom St., San Francisco, Calif.

"LUCAS PRECISION"

Horizontal Boring, Drilling and Milling Machine
THE LUCAS MACHINE TOOL CO.



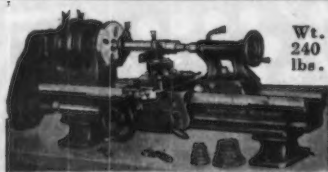
CLEVELAND,
OHIO, U. S. A.

LELAND-GIFFORD COMPANY

Worcester, Mass.

Drilling Machinery
Belt and Motor Spindle
One to Six Spindles

Tapping Attachments and Multiple Heads



Wt.
240
lbs.

SOUTH BEND LATHES

96 other sizes and types of Back-Geared, Screw Cutting Lathes from 9" to 18" swing, \$75 to \$1500, on terms if desired, shown in new General Catalog No. 94. Write for copy.

South Bend Lathe Works

593 E. Madison St.,
South Bend, Indiana, U. S. A.

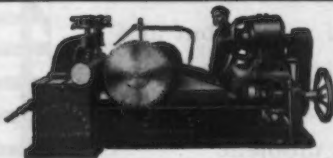
17 STYLES AND SIZES

MERRELL

PIPE THREADING MACHINES

for BETTER threads

TOLEDO, OHIO



Cutting Off
Machines for
Saving All Kinds
of Metals

THE ESPEN-LUCAS MACHINE WORKS
FRONT AND GIRARD AVE. PHILADELPHIA, PENNA.

MARVEL METAL BAND SAW MACHINES



Marvel Ball Bearing High Speed Hack Saws. Plain Shop Saws. High Speed Edge Hack Saw Blades and Hole Saws. Punches, Shears, Rod Cutters, Drill Press Vises.

Write Us Today.

ARMSTRONG-BLUM MFG. CO.
349 N. FRANCISCO AVE., CHICAGO, ILL.

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ABRASIVE WHEELS—See Grinding Wheels

ABRASIVE CLOTH & PAPER

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ABRASIVES—Steel Shot and Grit
American Foundry Equipment Co., Mishawaka, Ind.

Pangborn Corporation, Hagerstown, Md.

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Baldwin-Southwark Corp., Southwark Div., Philadelphia.

Wood, R. D., & Co., Philadelphia.

ACETYLENE—Dissolved in Cylinders

Air Reduction Sales Co., 60 East 42nd St., N. Y. C.

Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.

ACID RECOVERY EQUIPMENT

Chemical Construction Corp., 30 Rockefeller Plaza, New York City.

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American Chemical Paint Co., Ambler, Pa.

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Electro Metallurgical Sales Corp., 30 East 42nd St., N. Y. C.

ALLOYS—Magnesium

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ALLOYS—Phosphor Bronze

Phosphor Bronze Smelting Co., The, Phila.

Riverside (N. J.) Metal Co.

Ryerson, Jos. T., & Son, Inc., Chicago.

ALLOYS—Silico-Manganese

Electro Metallurgical Sales Corp., 30 East 42nd St., N. Y. C.

ALLOYS—Titanium

Metal & Thermit Corp., 120 B'way, N. Y. C.

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Vanadium Corp. of America, 120 Broadway, N. Y. C.

ALLOYS—Vanadium

Vanadium Corp. of America, 120 Broadway, N. Y. C.

ALLOYS—Zinc Base Die Casting

New Jersey Zinc Co., The, 160 Front St., N. Y. C.

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Aluminum Co. of America, Pittsburgh.

Fellgman, Arthur, & Co., Inc., 30 Rockefeller Plaza, R. C. A. Bldg., N. Y. C.

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Illinois Steel Co., Chicago.

Inland Steel Co., Chicago.

Jones & Laughlin Steel Corp., Pittsburgh.

Pacific Coast Steel Corp., San Francisco, Calif.

Ryerson, Jos. T., & Son, Inc., Chicago.

Steel & Tubes, Inc., Cleveland.

Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

Weirton (W. Va.) Steel Co.

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Wilton, Lee Engineering Co., Cleveland.

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Feymour (Conn.) Mfg. Co.

Udylite Co., The, Detroit.

ANODES—Cadmium

Udylite Co., The, Detroit.

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Sleeper & Hartley, Inc., Worcester, Mass.

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Illinois Steel Co., Chicago.

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—Baling

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Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

Hartford (Conn) Steel Ball Co., The.

BALLS—Steel, Brass or Bronze

Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

Pafnir Bearing Co., New Britain, Conn.

Hartford (Conn) Steel Ball Co., The.

New Departure Mfg. Co., Bristol, Conn.

SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

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Acme Steel Co., Chicago.

BANDS—Welded

Amer. Welding & Mfg. Co., Warren, O.

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Harnischfeger Corp., 4401 W. National Ave., Milwaukee.

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Abbott Ball Co., The, 1047 New Britain Ave., Hartford, Conn.

BARRELS—Tumbling

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Baird Mch. Co., The, Bridgeport, Conn.

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BARS—Aluminum

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BARS—Brass, Bronze or Copper

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Ryerson, Jos. T., & Son, Inc., Chicago.

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Union Drawn Steel Co., Massillon, Ohio.

BARS—Concrete, Reinforcing

Inland Steel Co., Chicago.

Jones & Laughlin Steel Corp., Pittsburgh.

Laclede Steel Co., St. Louis, Mo.

Pacific Coast Steel Corp., San Francisco, Calif.

Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

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Dow Chemical Co., 921 Jefferson Ave., Midland, Mich.

BARS—Steel

Ames, W., & Co., Jersey City, N. J.

Andrews Steel Co., The, Newport, Ky.

Bethlehem (Pa.) Steel Company.

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Timken Roller Bearing Co., The, Canton, O.

Timken Steel & Tube Co., The, Canton, O.

Weirton (W. Va.) Steel Co.

Youngstown (Ohio) Sheet & Tube Co., The.

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Gould Storage Battery Corp., Depew, N. Y.

BATTERY CHARGERS

Cutler-Hammer, Inc., Milwaukee.

BEAMS—See Angles, Beams, Channels and Tees

BEARINGS—Ball

Bantam Ball Bearing Co., The, South Bend, Indiana.

Pafnir Bearing Co., New Britain, Conn.

Federal Bearings Co., Inc., Poughkeepsie, N. Y.

New Departure Mfg. Co., Bristol, Conn.

SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

Schatz Mfg. Co., The, Poughkeepsie, N. Y.

BEARINGS—Brass and Bronze

Bunting Brass & Bronze Co., Toledo, O.

Ryerson, Jos. T., & Son, Inc., Chicago.

BEARINGS—Oilless

Bunting Brass & Bronze Co., Toledo, Ohio.

Rhoads, R. W. Metaline Co., Inc., Long Island City, N. Y.

BEARINGS—Quill

Bantam Ball Bearing Co., The, South Bend, Indiana.

BEARINGS—Radial

Bantam Ball Bearing Co., The, South Bend, Indiana.

Pafnir Bearing Co., New Britain, Conn.

Federal Bearings Co., Inc., Poughkeepsie, N. Y.

Hyatt Roller Bearing Co., Newark, N. J.

New Departure Mfg. Co., Bristol, Conn.

SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

Schatz Mfg. Co., The, Poughkeepsie, N. Y.

BEARINGS—Roll Neck

Bantam Ball Bearing Co., The, South Bend, Indiana.

S K F Industries, Inc., Front St. & Erie Ave., Phila., Pa.

Timken Roller Bearing Co., The, Canton, O.

BEARINGS—Roller

Bantam Ball Bearing Co., The, South Bend, Indiana.

Hyatt Roller Bearing Co., Newark, N. J.

SKF Industries, Inc., Front St. & Erie Ave., Phila., Pa.

Timken Roller Bearing Co., The, Canton, O.

BEARINGS—Roller Tapered

Bantam Ball Bearing Co., The, South Bend, Indiana.

Timken Roller Bearing Co., The, Canton, O.